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Pulp and Paper Reflect Increasing Demands

Break Down of Supply and Planned Use of These Commodities For Second Quarter of 1945 Compared With 1940, 1941 and 1944 Show Demands Have Increased Faster Than Country's Total Supply.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 25, 1945—War-boosted demands for wood pulp, paper and paperboard have increased faster than the country's total supplies, Benton R. Cancell, director of War Production Board's Forest Products Bureau, explained today in making public a tabular breakdown of the supply and planned use of these commodities for the second quarter of 1945 in comparison with similar data for 1940, 1941 and 1944.

TABLE I.—WOOD PULP SUPPLY AND USE
(In thousand tons)

	Average Quarter			(Program) 2nd Quarter
	1940	1941	1944	1945
Wood Pulp Supply	2,546	2,884	2,784	2,855
Dom. Production	2,240	2,594	2,522	2,592
Imports	306	290	262	263
Wood Pulp Use	2,631	3,006	2,812	2,843
Paper and Paperboard	2,445	2,841	2,622	2,600
Non-Paper	65	83	141	182
Export	121	82	49	61

Table I of the two basic tables shows the supply and use of the wood pulp from which paper and paperboard are made.

Mr. Cancell further explained the tables as follows:

The estimated wood pulp supply in the second quarter of 1945 is somewhat higher than in the average quarter of 1944, considerably higher than in the 1940 quarter, and only slightly lower than in the average quarter of the record-breaking year 1941. Wood pulp use is planned at a level higher than that of 1944, and considerably higher than that of 1940, although below that of 1941, when users of wood pulp were able to draw heavily upon inventories that are no longer available. Wood pulp exports in the second quarter of 1945 are at only half the 1940 level, and approximately three-fourths of the 1941 level, though somewhat higher than that of 1944.

The largest percentage of change in wood pulp use occurred in the non-paper field, where requirements have almost tripled since 1940. The increase, however, is accounted for almost entirely by the use of wood pulp for the manufacture of explosives and high-tenacity rayon for the tire program. The quantity of wood pulp available for paper and paperboard production in the second quarter of 1945 is almost as high as the 1944 average and considerably higher than the 1940 average quarter, although substantially below the record year of 1941.

TABLE II.—PAPER AND PAPERBOARD SUPPLY
(In thousand tons)

	Average Quarter			(Program) 2nd Quarter
	1940	1941	1944	1945
Paper and Paperboard	4,325	5,210	4,940	5,020
Dom. Production:				
Paper	2,009	2,340	2,055	1,951
Paperboard	1,612	2,100	2,241	2,420
Imports (chiefly newsprint)	704	770	644	649

Table II shows that the estimated supply of paper and paperboard in the second quarter of 1945, comprising domestic production plus imports (chiefly newsprint), is far in excess of the 1940 average supply, somewhat above the 1944 supply, but somewhat below the average quarter of the record-breaking year of 1941. Supplies of paper (excluding paperboard) will be the lowest since 1940, while constantly expanding paperboard production should reach a new high level in the second quarter of 1945.

The great increase in paperboard production has been necessitated

(Continued on page 16)

THE FRONT LINE

Nearly half a century in selling and sales management makes for sympathy with salesmen and their problems of today. With that background it is easy to realize what it means to be compelled to tell steadfast customers that, for various reasons, they must get along with less than their needs.

We are approaching the end of the greatest of all world conflicts. The usual period of post-war demand for commodities of all kinds will doubtless follow this war, as it has all others. Whether or not any long depression with severe competition will thereafter develop remains to be seen. To be unprepared would be disastrous.

Those who have seen hard times cannot forget how difficult it was to obtain and hold good customers:—how easily their favor can be lost. Those who came up the hard way do not become "cocky" in a war market. They treat their customers with more consideration than ever.

All employees, particularly those connected with sales and customer relations, including the newest clerk or telephone operator or typist on the payroll, should understand that each one has a real part to play in company efficiency.

A sales force reflects to the public the ethical standards and the character of the company it represents. When guided and inspired by able and sympathetic leadership, it is an asset of outstanding value and a bulwark against the impact of difficult competition.

Such a force is THE FRONT LINE in capturing and holding customer good will!

JOSEPH L. FEARING

Expects No Relief in Short Paper Supply

Midwest Market Opinion Reflects Little Optimism of Any Material Improvement In Civilian Paper Situation Until Late In Final Quarter—Professional Paper Group Meets—Other Market News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 23, 1945—The Chicago paper trade gave little indication this week of optimism concerning the current outlook for the industry. Group meetings held during the week, at which "round table" discussions were a feature, revealed only pessimism concerning the outlook for at least far into the final quarter of the year. Those who felt that the Swedish pulp situation would improve conditions in the event the European phase of the war ends soon were checked by the realization that shipping facilities would still be materially curbed despite an end to hostilities.

Locally, paper jobbers were findng it increasingly difficult to supply the civilian trade and here are expectations of a pronounced shortage in business papers as backlogs are being drained to the point of extinction. The situation in book and cover papers and in all grades of sulphites was reported as increasingly acute while the board trade here reported "no idea of how it was going to get through the third quarter" in view of curtailment and demands. Shortages of manpower and of chemicals in paper manufacture disturbed and clouded the outlook in all lines. Waste paper collections were said to be good—from both the "amateur" and "professional" quarters.

More Salvage Drives

Chicago's industries are giving wholehearted and vigorous support to the "Eisenhower-Boy Scout" waste paper pick-up campaign which is scheduled for Saturday, April 28. In attempting to crack all existing records employer organizations are mailing out colorful streamers describing how to bundle waste paper for war usage. The four methods—for waste basket paper, magazines, newspapers and paper boxes—are forcefully illustrated in the mailing piece.

Meanwhile, business men of this city have reacted favorably to the appeal made by J. A. Krug, chairman of the War Production Board, to support the Double-V paper salvage campaign.

Professional Paper Group Meets

The Chicago Professional Paper Group held one of its largest and most enthusiastic meetings on Monday evening, April 16, in the dining rooms of the Chicago Bar Association. Most of the members were among the 160 who attended and stayed to participate in the questions and answers program. Speaker of the evening was F. B. Speyer of the American Resinous Chemicals Corporation of Peabody, Mass., who discussed "Laminants and Coatings for Paper, Plastic Films and Metal Foils." The paper was one of those which had been prepared for delivery at the February meetings of TAPPI which were called off. Remarks of Mr. Speyer were augmented by a series of lantern slides which illustrated major features of the talk. Assisting Mr. Speyer were Messrs. Bremowitz, Martin and Palais all of American Resinous Chemicals Corporation. Each of these gentlemen participated in the questions and answers program. The paper and program covered the broad field of lamination and coating from a technical rather than a research or future developments basis.

It was also reported that the Professional Paper Group had now reached the 150 membership mark and that in the one and a half years of its existence it had proven to be "the fastest growing organization of its kind in the country." The Association has enthusiastically proven that the few men who organized the group less than two years ago were on the right track—both in ideas and in presentation of programs sufficiently varied to retain the interest of a wide variety of members in the paper, chemical and allied fields.

New Container Corp. Executive

James A. Cunningham, vice president in charge of finance, personnel and claims of Peoples Gas Light and Coke Company since 1941, this week became affiliated with the Container Corporation of America as vice president. Cunningham is 41 years old and perhaps one of the most outstanding business and civic leaders in Chicago. He has been with Peoples Gas since 1937 and formerly was a Commonwealth Edison Company official. Mr. Cunningham will be in charge of all financial matters for the Container Corporation of America. He is president of the Civic Federation of Chicago, vice chairman of the Community and War Fund Committee and a member of the policy board of the Chicago Association of Commerce.

R. L. Chisholm Joins Carter, Rice

Raymond L. Chisholm, long associated with the United States Envelope Company, Springfield, in various capacities and for a number of years as engineer in the packaging of war materials to government specifications, has joined the staff of Carter, Rice & Co., Corporation.

His long experience in the specialized field of packaging will be available to industrial plants throughout the New England area by personal contact and through the Carter, Rice Sales Organization.

For the present Mr. Chisholm will make his headquarters at 165 Maynard Street, Springfield, Mass., Telephone 6-5557.

Scottish Mills Lack Raw Material

An apparent shortage of straw at the mill end and greatly reduced collections of waste paper have put Scottish paper mills in a precarious position and they can no longer promise regularity of output, says a report to the Department of Commerce.

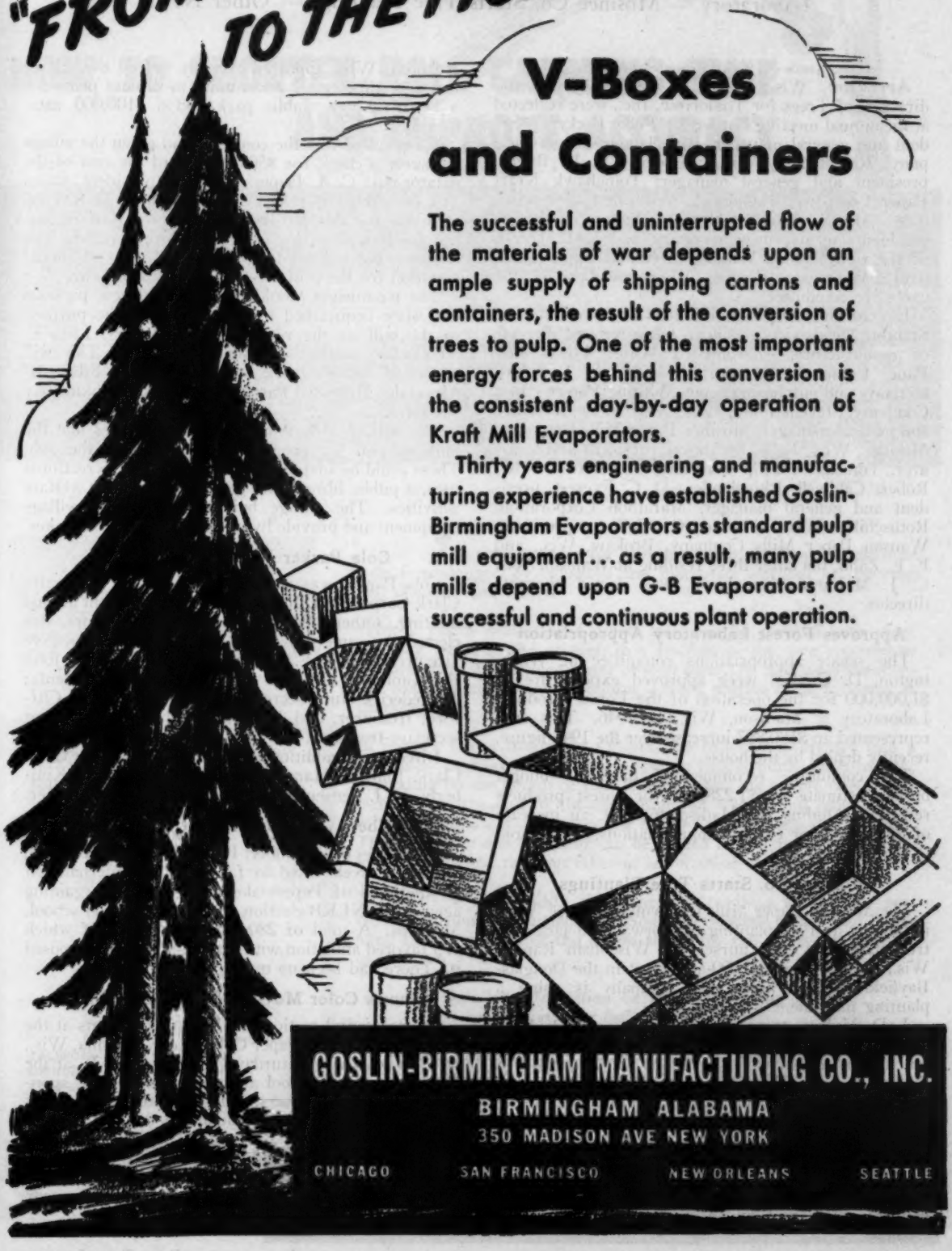
The Department of Agriculture for Scotland is now making an urgent appeal to farmers to bale their oat and wheat straw so it can be made available to mills without delay. Transportation irregularities have no doubt hampered the flow of straw to mills but unless the situation is improved immediately, mills will have difficulty in maintaining production.

"FROM THE FOREST-
TO THE FIGHTING FRONT"

V-Boxes and Containers

The successful and uninterrupted flow of the materials of war depends upon an ample supply of shipping cartons and containers, the result of the conversion of trees to pulp. One of the most important energy forces behind this conversion is the consistent day-by-day operation of Kraft Mill Evaporators.

Thirty years engineering and manufacturing experience have established Goslin-Birmingham Evaporators as standard pulp mill equipment... as a result, many pulp mills depend upon G-B Evaporators for successful and continuous plant operation.



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News of the Wisconsin Paper Industry

Officers and Directors of Trees For Tomorrow Are Reelected — Senate Approves $1,000,000 Appropriation For Forest Products Laboratory — Mosinee Co. Starts Tree Plantings — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 23, 1945—Officers and directors of Trees for Tomorrow, Inc., were reelected at the annual meeting last week: Folke Becker, president and general manager, Rhinelander Paper Company, Rhinelander, Wis., president; S. B. Bugge, president and general manager, Tomahawk Kraft Paper Company, Tomahawk, Wis., first vice president; M. N. Taylor, Merrill, Wis., second vice president and executive secretary, and E. B. Hurst, of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., member of the executive committee.

Elected directors, in addition to the above officers: Stanton Mead, vice president, treasurer and director of manufacture, Consolidated Water Power and Paper Company, Wisconsin Rapids; A. J. Schirl, secretary and purchasing agent, Whiting-Plover Paper Company, Stevens Point, Wis.; N. S. Stone, secretary and general manager, Mosinee Paper Mills Company, Mosinee, Wis.; K. S. Dickinson, president and treasurer, Tomahawk Pulp Company, Tomahawk, Wis.; Robert Caldwell, Rhinelander; D. C. Everest, president and general manager, Marathon Corporation, Rothschild, Wis.; Harold C. Collins, president, Wausau Paper Mills Company, Brokaw, Wis., and E. E. Zahn, the latter three residing at Wausau, Wis. C. J. McLaren, Tomahawk, was elected alternate director.

Approves Forest Laboratory Appropriation

The senate appropriations committee at Washington, D. C., last week approved expenditure of $1,000,000 for the operation of the Forest Products Laboratory at Madison, Wis., in 1946. This sum represented an $180,897 increase over the 1945 figure, recently denied by the house.

The committee recommended that the budget bureau estimate of $1,228,000 for forest products research including the Madison project, an increase of $227,520 over current appropriations, be restored to the bill.

Mosinee Co. Starts Tree Plantings

The Mosinee Paper Mills Company, Mosinee, Wis., is starting its 1945 planting of Norway and jack pine trees from the state nursery at Wisconsin Rapids, Wis., on part of its 60,000-acre tract in the Douglas-Bayfield country area. The company is using a planting machine.

J. D. Mylrea, treasurer of the company, said the plantings will be about double those of a year ago, but that more extensive operations will be started in the post-war period, when labor will be more plentiful.

Frank Fixmer, Spooner, Wis., a graduate forester of Syracuse University, Syracuse, N. Y., is in charge of the reforestation activities.

J. E. Alexander Discusses Plans for Park

John E. Alexander, president of the Nekoosa-Edwards Paper Company, Port Edwards and Nekoosa, Wis., appeared recently before the village board of the former community to discuss plans for a beautiful new public park and a $100,000 natatorium.

He revealed that the company had given the village treasurer a check for $50,000 toward the cost of the natatorium. C. A. Jasperson, village president, stated that the village of Port Edwards could make $25,000 available for this purpose from its share of income tax funds without increasing the property tax. The company has indicated the possibility of an additional donation for the project at the end of this year.

The natatorium would be built in a new park on the estate bequeathed to the village for the purpose in the will of the recently-deceased Mrs. Lida E. Alexander, mother of Mr. Alexander. The will requested that the park be known as the Edwards-Alexander Memorial Park. The tract is approximately six acres.

The will of Mrs. Alexander also provides that the buildings on the property be included in the gift. These could be adapted for club purposes, recreational uses, a public library and general community welfare activities. The garage building may house village equipment and provide living quarters for a caretaker.

Cola Parker Reelected President

Cola Parker was reelected president of Kimberly-Clark Corporation, Neenah, Wis., at the recent annual meeting. Other officers, chosen by the directors, also elected the same day, are: Ernst Mahler, executive vice president; S. F. Shattuck, Charles H. Sage, John R. Kimberly and H. G. Boon, vice presidents; J. Frederick Hunt, secretary-comptroller; W. H. Clifford, treasurer, and F. E. Sensenbrenner, assistant secretary-treasurer.

Directors in addition to those named above: C. B. Clark, John M. Hancock, Walter Kasten, J. C. Kimberly, F. J. Sensenbrenner, and J. S. Sensenbrenner.

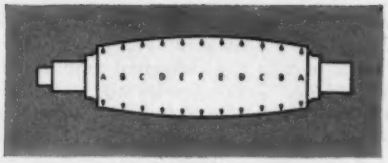
Gilbert Co. Workers Vote for I.B.P.

Employees of the Gilbert Paper Company, Menasha, Wis., last week voted in favor of the International Brotherhood of Papermakers (AFL) as bargaining agent. The NLRB election was held at Nicolet school, Menasha. A total of 280 votes were cast, of which 175 favored affiliation with the union and 112 opposed it. There had been no union at the company.

Shows Color Movies of Thilmany Plant

Colored sound motion pictures of operations at the Thilmany Pulp and Paper Company, Kaukauna, Wis., were shown twice Saturday evening, April 21, at the Kaukauna High School auditorium, under the sponsorship of the Thilmany Girls Club. Dancing, cards and refreshments followed the movie, each run requiring about an hour. The picture was restricted to Thilmany employees and their families and a few Kaukauna citizens who received special invitations. The picture will be shown to the public in the near future at a theater.

HOW TO SHORTEN ROLL GRINDING TIME AND IMPROVE ACCURACY



The time required for grinding paper machine and calender rolls is prolonged by laborious and inaccurate methods of checking roll diameter and crown.

With a Farrel Indicating Caliper, rolls can be checked with great accuracy, while in the grinder, in a fraction of the time required to measure them with a micrometer or steel tape. The mill superintendent can control accuracy by prescribing a fixed routine to be followed in checking rolls.

In using a Farrel Indicating Caliper, the roll face is divided into a convenient number of equal parts, such as tenths, ninths, eighths, etc., depending on the length of roll. Measurements are started one or two inches from the end of the face. Light in weight and mounted on rollers, a finger's touch moves the Farrel Caliper along the roll face. The adjustable dial indicator can be turned to any angle for convenient visibility and readings taken at any number of points.

The operator can quickly check the dial readings against the previously calculated diameters at various intermediate points and determine the correctness of the crown shape for the desired amount of total crown.

For detailed information on Farrel Indicating Calipers send for Bulletin No. 112.

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Coating Rolls
Creping Rolls
Plater Rolls
Cutting Rolls
Paraffining and Waxing Rolls
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GRINDING MACHINES: Roll
CALIPERS: Roll
GEARS, CUT: Spur, Single and Double Helical (Farrel-Sykes Continuous Tooth Type)
SPEED REDUCING GEAR UNITS
SPEED INCREASING GEAR UNITS
FLEXIBLE COUPLINGS

Farrel-Birmingham

Canada Discusses Post-War Industry Plans

Dominion Government In Agreement With United States To Re-employ Workers Who Left Paper Industry For War Plants—Outlines Reconversion Plans of Government, Including Controls, Etc.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 23, 1945—Canada is acting in thorough agreement with, and support of, American governmental authorities in plans to lure back to the pulp and paper and other forest industries, as they become available, many thousands of workers who during the war have been engaged in war industries, and is giving full support to special wartime laws by which the Government can compel employers to take back in their old jobs those who enlisted for active service.

At a conference of employers, held at the Seigneury Club, Que., to perfect plans for successful reassimilation, which conference was attended by senior executives from all the major industries in Canada, from coast to coast, thorough agreement was expressed by representatives of the pulp and paper industry with the governmental objectives and regulations in this respect and with the declaration of the conference that employers would not only meet the government's minimum requirements, as laid down by law, but would use their utmost efforts to do more than the law required to place returning men in gainful employment under satisfactory conditions.

Particular interest was shown by the pulp and paper men in discussions relating to the employment of younger men who prior to enlistment had had no gainful employment. For these, as well as for other men, a highly successful educational service has been available under the auspices of the Canadian Legion. It was stated that the pulp and paper industry would require large numbers of new employees, in addition to those former employees who returned, and the industry heartily supported a resolution to be forwarded to the government asking for action in supplying employers for a classified analysis of men who had no "commercial home" to return to and of their status under the vocational training which has been available to them while serving in the Forces.

Reconversion as Applying to the Industry

During the past week immense interest has been aroused in a White Paper issued by the Government setting forth its plans for reconversion in the initial period of reconstruction between the end of the war in Europe and the end of the war in the Pacific. The central task adopted by the Government as a primary object of policy is defined as the accomplishment of "a smooth, orderly transition from the economic conditions of war to those of peace and to maintain a high and stable level of employment and income." It is estimated that the employment of less than 960,000 persons over the level of 1939 would provide a high level of employment for the population. The Government does not believe it is either desirable or practicable to look to the expansion of government enterprise to provide this additional employment, and therefore will facilitate and encourage an expansion of private industry, including primary with other industries. Owing to continuance of war work after the war in Europe is ended, and to the backlog of deferred demands in civilian requirements, the full increase mentioned will be neither required nor possible until after victory in the Pacific.

Credits for Exports

Recognizing the vital importance of export trade in the Canadian economy, the Government considers exports of $1,750,000 annually as a practicable and desirable target for post-war exports of merchandise and non-monetary gold, which would be about half the current swollen wartime exports, and while being about 60% above the pre-war level in dollar value, would be only about 15% higher in the amount of goods exported. Exports will be encouraged by continuation of Mutual Aid; by extension of credits to other governments to restore and maintain historic markets and develop new ones; by continuing to press actively for a wide collaboration in the reciprocal reduction and removal of trade barriers; and by the encouragement of imports from other countries in payment for Canadian exports to them. As the pulp and paper industry is by far the largest export industry in Canada, it will be seen how important to it will be the application of this policy.

To Assist in Deferred Maintenance

The Government further proposes, in the period immediately following the European War, to reduce the barriers to what it calls the abnormal amount of capital and maintenance expenditures to be made as soon as labor and materials are available. The assistance and controls at the disposal of the Government will be used to facilitate private investment in this field, which again means great activity in deferred maintenance and modernization of pulp and paper plants.

A further and more important provision is that in respect of new investment in industrial plant and equipment the business taxpayer may select a rate of depreciation not less than one-half and not more than double the normal rates. These provisions give assurance to business that, pending the time when it is possible to reduce wartime taxation, new investment will not encounter fiscal penalties.

In this connection it may be mentioned that already projects for some $50,000,000 of capital expenditures have been made the subject of applications for double depreciation, pulp and paper modernization plans figuring largely in the total, as well as lumber operations and plywood industries.

Forest Conservation Expenditures

Plans for expenditures on government works are to be kept "on the shelf" for use in staving off unemployment in dull periods, but here again there is an important bearing on the pulp and paper industry. This is seen in the high rating which the Government gives to the implementation, in co-operation with the Provinces of a new Dominion policy of expenditures on the development and conservation of natural resources, in which, of course, the forests are particu-

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larly prominent. This new policy, it is held, represents true investment expenditure yielding valuable returns, the White Paper adding: "There is in the field of development and conservation the opportunity at appropriate times for genuine public investment which would induce more private investment and not supplant it."

Of importance also to the pulp and paper industry are steps to make available to industry technical and scientific information and generous fiscal provisions for charging as current expenses, or writing off over a period of years against taxable income, all expenditure and investment made in research facilities.

Controls and Taxation

In respect to wartime controls, the Government says that in the period following the European war its policy will be to relax controls over production, materials and manpower as rapidly as supplies justify. As to price control and other anti-inflationary measures, the Government holds that the need for these will not disappear with the end of the European war, and says it is determined to safeguard the stabilization program "until its full benefits can be reaped in a smoother, more rapid transition to a prosperous peacetime economy."

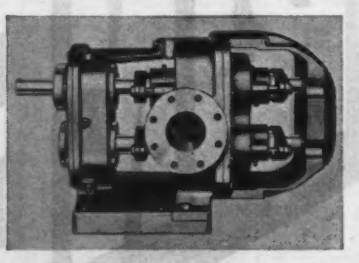
Admitting that wartime taxation in Canada had been deliberately designed to discourage new investment, and thus to be deflationary, the Government promises a quite different policy after the war, declaring that it proposes not only to reduce taxation as rapidly as possible, but to develop its fiscal policy so as to encourage the increase of private investment to a high and stable level, and particularly to eliminate or minimize taxation which contributes to a higher level of production costs, and also to keep interest rates low after the war so as to encourage the investment of funds in productive capital contributing to employment.

D. E. Acker Joins Arthur D. Little, Inc.

David E. Acker, chemical engineer, has recently joined the staff of Arthur D. Little, Inc., Cambridge, Mass., industrial research organization. Mr. Acker was previously associated with the B. B. Chemical Company.

Heavy Duty Industrial Pump

A heavy duty industrial pump, designed and made for heavy duty positive handling of liquids, is announced by Bump Pump Company, La Crosse, Wis. Illustrated here, it has operating speeds that range from 0 to 400 rpm, and capacity of 100 gallons per 100 revolutions. Made with ball bearings in both face plate and rear gear case, this heavy duty industrial pump can be furnished with either flanged or threaded intake and discharge ports. Due to its heavy construction, maintenance costs are reduced to a minimum. The pump can be made of iron, bronze, nickel alloy, stainless steel, or other metals, and can be furnished in direct, v-belt or pulley drive.



Philadelphia Paper Men Meet

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 23, 1945—Approximately 150 members and their guests attended the annual shad dinner of the Philadelphia Paper and Cordage Association held during the month at Palumbo's. This is always an outstanding affair of the association and abounds with good fellowship and comraderie as will be attested by the expressions on the faces of those seated at the table and standing in the foreground.

PHILADELPHIA PAPER MEN AT SHAD DINNER

Seated at the table are on left: Carroll T. Gardner, Groveton Paper Company and Henle Wax Paper Manufacturing Company, president; Morris H. Walther, D. L. Ward Company, treasurer; Horace Sumpton, sales manager Denny Tag Company; on right: Jack Culverhouse, Fort Howard Paper Company, director; Chas. J. Stokes, Sabin Robbins Paper Company, publicity chairman, and Harry S. Platt, Denny Tag Company, chairman of finance committee. Standing: W. L. Benson, Dennison Manufacturing Company; J. R. Howarth, J. R. Howarth Paper Company, fellowship committee, and Clyde Althouse, Denny Tag Company.

Elected Alli-Chalmers Director

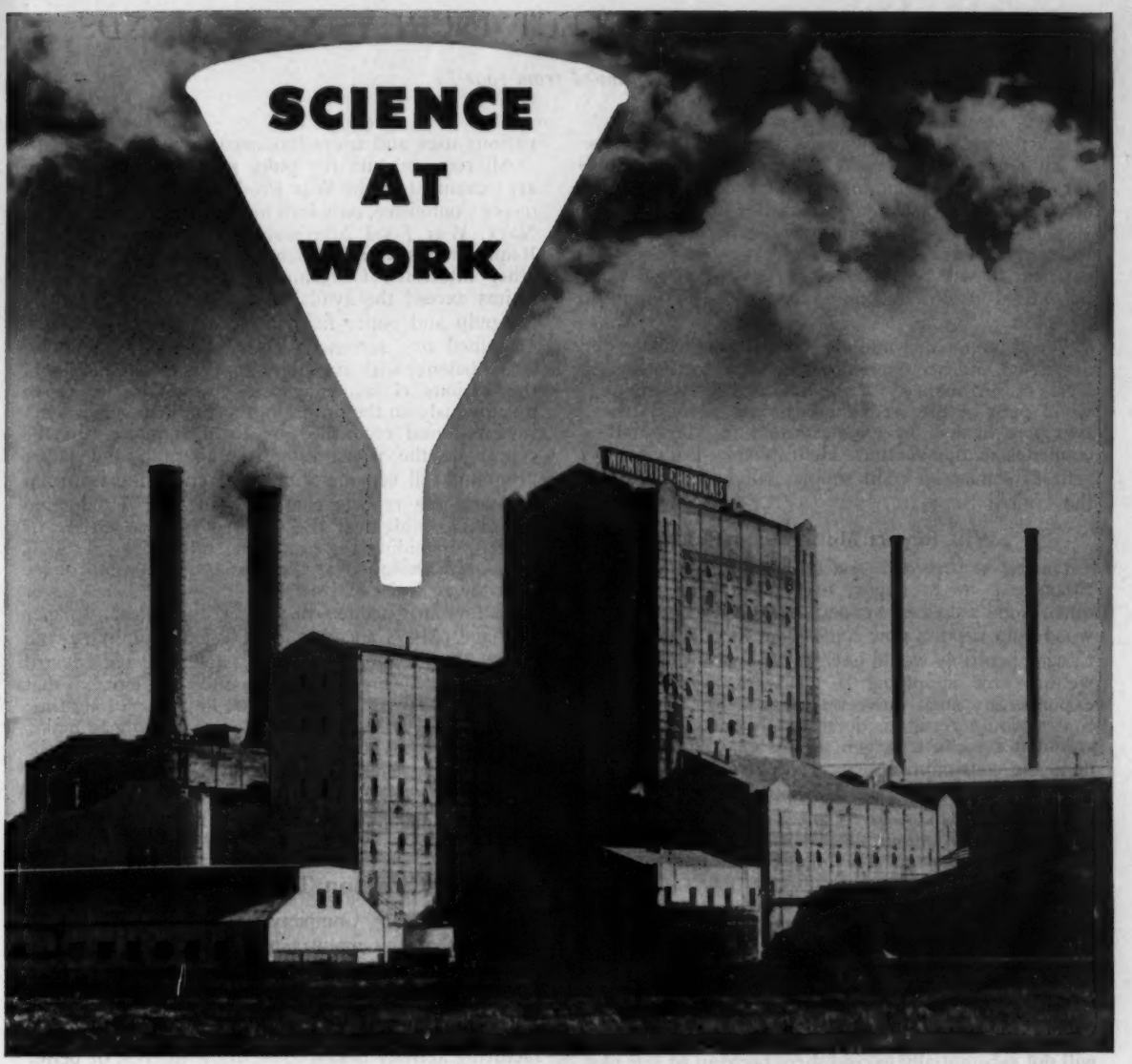
John Howard Collier, president of the Crane Company, Chicago, Ill., was elected a director of the Allis-Chalmers Manufacturing Company, it has been announced by Walter Geist, Allis-Chalmers president, following a meeting of the board of directors.

Mr. Collier fills the post left vacant by the resignation of Capt. Lester Armour of Chicago, who has been out of the country in the service of the navy most of the time since the outbreak of the war.

After attending Purdue University, Mr. Collier joined the Crane Company in 1903 as an apprentice foreman. He progressed steadily through many positions and was made general manager of the company in 1912. He served in this post until 1917 when he went abroad, serving as chairman of the board of Crane, Ltd., England, and president of Cie Crane, France. He returned to this country in 1929. In 1933 he was elected vice president of the company and served in that capacity until 1941, when he became president.

He also is associated with the Crane Ltd., Canada; Crane Ltd., Great Britain; Port Hope Sanitary Manufacturing Company, Ltd., Canadian Potteries Ltd., and Crane Enamelware Company. He is chairman of the board of the Trenton Potteries Co.

Mr. Collier is a trustee of the Illinois Institute of Technology.



Part of North Plant, Wyandotte Chemicals Corporation, Wyandotte, Michigan, equal in height to an 18-story building. Here are produced three of the Wyandotte chemicals that meet the exacting requirements of American industry.

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VITAL TO VICTORY TODAY—READY TO WORK FOR A GREATER TOMORROW

PULP AND PAPER REFLECT INCREASING DEMANDS

(Continued from page 7)

primarily by the tremendous demand for domestic shipping containers, as well as by large demands for ammunition containers, bomb bands, K-ration boxes and the packaging of other military items. Because of the use of more waste paper and other waste materials, it is expected that more paper and paperboard will be produced per ton of virgin wood pulp used in the second quarter of 1945 than in the past.

Wood pulp, paper and paperboard supplies have not decreased, but are currently very close to the highest levels in our history. Of the total estimated supply of wood pulp in the second quarter of 1945, not over two percent will be exported to our Allies and to countries in the Western Hemisphere. Fully 98 per cent of our wood pulp supply will be consumed in the United States.

Will Import More Wood Pulp

During the second quarter of 1945 the United States expects to import more than four times as much wood pulp as we expect to export. Since all our wood pulp imports now come from Canada, and since Canada probably would have to supply those countries we are now supplying if we were to reduce our exports, any such move on the part of the United States would result in decreased imports, and hence would not mean a larger supply of wood pulp for domestic consumption.

With respect to the distribution of paper and paperboard supplies, Mr. Cancell stated that military requirements would cut deeply into the over-all supply in the second quarter. The impact of military requirements will be felt in many grades of paper as well as paperboard. In the paperboard field, for example, the large war needs for fiber shipping containers (V-boxes) for overseas shipment will cut heavily into the total supply of Kraft pulp and containerboard. The approved exports of paper and paperboard for the second quarter represent only a small part of our total new supply. In all probability, such exports will not substantially exceed three per cent of our new supply, leaving about 97 per cent of our total supply available for consumption in the United States.

The Supply Problems

Concerning supply problems, Mr. Cancell said: "The War Production Board recognizes that in spite of the high levels of paper and paperboard production it has been able to maintain, shortages have been and will be felt by civilians in many categories. The printing and publishing trade has already felt the pinch, as have retail merchants and even some industrial users. It is believed, however, that when American business and American consumers understand fully the necessity and the inevitability of these shortages, the required sacrifices will be made cheerfully.

"The War Production Board's pulp and paper program is prepared every three months with the utmost care. Every effort is exerted to increase the supply so as to meet the needs of the war and the war supporting economy to the maximum possible extent. To increase supply, pulpwood cutting drives have been carried out, prisoners of war employed, paper salvage drives put on and maximum imports arranged. In distributing supply, the relative essentiality of the various uses and users has been carefully weighed."

All requirements for pulp, paper and paperboard are examined by the War Production Board Requirements Committee, on which are represented the Army, Navy, War Food Administration, Office of Civilian Requirements, Foreign Economic Administration, and other interested Government agencies. When total claims exceed the available supply, as is the case in the pulp and paper field, these claims are carefully examined or "screened" and reduced to the point where balance with available supply is effected. Should the various claimant agencies be unable to agree unanimously on the program, the conflicting views are reviewed and reconciled by the committee. In the course of the preparation of the pulp and paper program, full consideration is given to the information and the reports channeled to War Production Board from all over the country from a variety of sources, including the producing mills. The result is a program designed as the best possible compromise with the realities of war.

Victory in Europe will not end the pulp and paper shortage, Mr. Cancell said. Although military and export requirements for pulp, paper and paperboard may decline somewhat, it must be anticipated that over-all needs will continue to be high for a long time to come. WPB has made, and is continuing to make, every effort to insure that pulp and paper will be shipped from Sweden and other Scandinavian countries at the earliest possible moment, and that a fair share of such supplies comes to the United States, he said.

Black-Clawson Transfer Production

Black-Clawson Company, Hamilton, Ohio, announces that the manufacture of waxing machines and water finish equipment has been transferred from Shartle Brothers, Middletown, Ohio, to Dilts Machine Works, Fulton, N. Y. Both of these companies are Black-Clawson divisions. The transfer of this manufacturing activity is said to be in the interest of better service to the paper converting industry. Communications regarding waxing machines and water finish equipment should be directed hereafter to Dilts Machine Works, Fulton, N. Y.

Goes With Gardner-Richardson

Frank E. Irsch, Jr. recently a captain in the Chemical Warfare Service has been placed on the inactive list by the War Department. He has joined The Gardner-Richardson Company, manufacturer of boxboard and folding cartons . . . and will be located in the company's sales office at 500 Fifth avenue, New York City.

Ray E. Madden Goes With Towmotor

Towmotor Corporation announces the appointment of Ray E. Madden as district sales and service representative for the Chicago area. Office and warehouse are at 6321 South Wentworth avenue.

Mr. Madden has been engaged in sales and application engineering of industrial trucks for the past ten years in several eastern and midwestern territories.

Successful Combinations...

Clean, square-edged rolls of Hammermill Bond produced on Langston Type "AA" Slitter and Roll Winder

Down the years, poets have sung about the power of the pen—but the pen is helpless without paper to carry its message. Together, they are a successful combination. And wherever paper is processed; you'll frequently find *Langston* working with such nationally known concerns as *Hammermill.*

Langston Slitters and Roll Winders fully meet the exacting standards of Hammermill Paper Co. in turning out their high quality products.

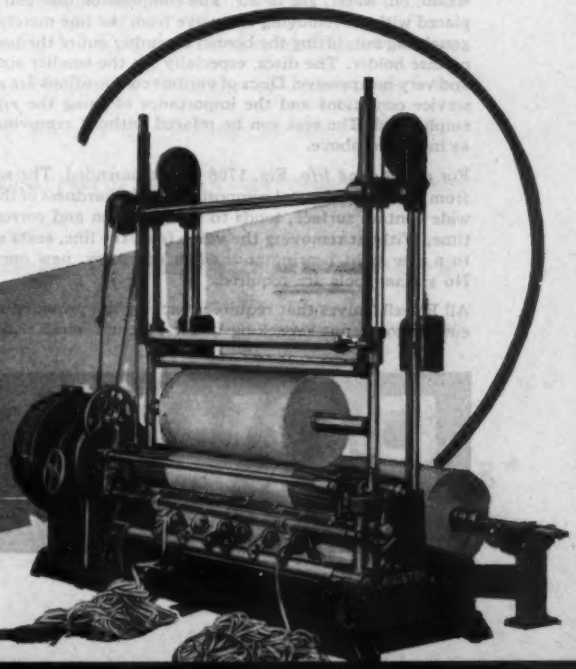
For a true, clean cut, and rolls of uniform density from core to outside diameter—*specify Langston.* There is a size and type for every requirement in mill, finishing room or paper converting plant.

SAMUEL M. LANGSTON COMPANY

CAMDEN, NEW JERSEY

Type "AA"

Built 50" to 72" wide. Speed, 1500 feet per minute. Minimum cut ¾".



Langston

SLITTERS AND ROLL WINDERS

Maintenance made easy with POWELL VALVES

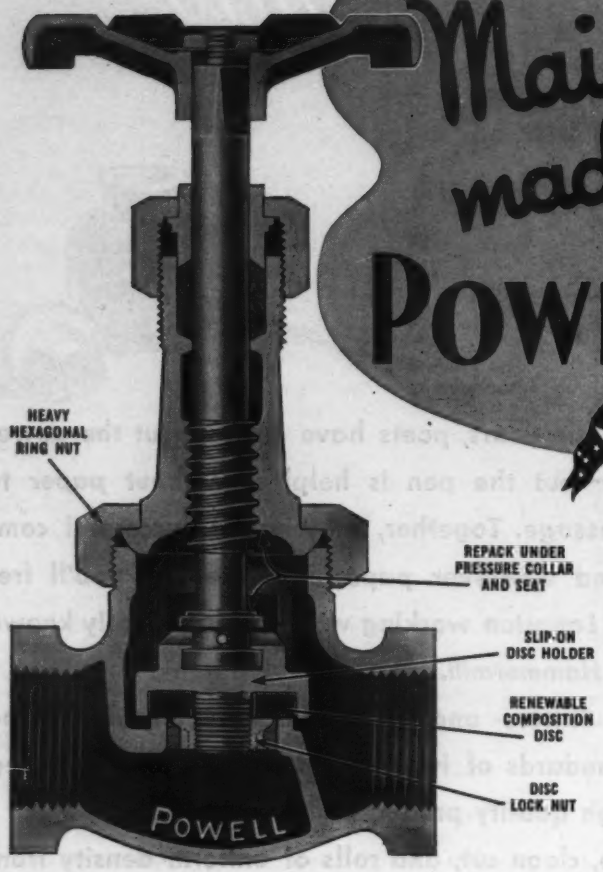


Fig. 150
BRONZE "UNION" COMPOSITION DISC GLOBE VALVE

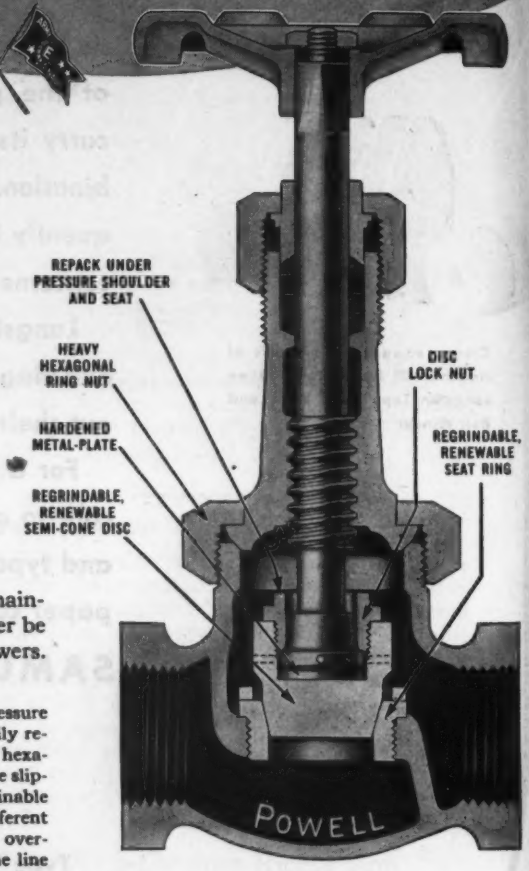


Fig. 1708
BRONZE "WHITE STAR" GLOBE VALVE

In these days of round-the-clock operation, time spent in the maintenance of equipment means a loss in production that can never be made up. If it's flow control equipment, Powell has the answers. Here are two examples.

Fig. 150—a Union Disc Globe Valve—is an economical valve for low pressure steam, oil, water, gas or air. The composition disc can be quickly and easily replaced without removing the valve from the line merely by backing off the hexagonal ring nut, lifting the bonnet assembly out of the body and removing the slip-on disc holder. The discs, especially for the smaller sizes, are readily obtainable and very inexpensive. Discs of various compositions are available to meet different service conditions and the importance of using the *right* disc cannot be overemphasized. The seat can be refaced without removing the valve from the line as indicated above.

For *extra long life*, Fig. 1708 is recommended. The seat ring and disc are made from special hard metal compositions. The hardness of the seat and disc, with their wide contact surface, tends to resist erosion and corrosion over a long period of time. Without removing the valve from the line, seats and discs can be reground to a new tight bearing and, when necessary, new ones can be easily installed. No special tools are required.

All Powell Valves that require repacking are provided with a specially machined cut-off to permit repacking under pressure when wide open.

The Wm. Powell Co.
Dependable Valves Since 1846
Cincinnati 22, Ohio

POWELL VALVES

Strategic Planning —FRAMEWORK FOR FINAL VICTORY

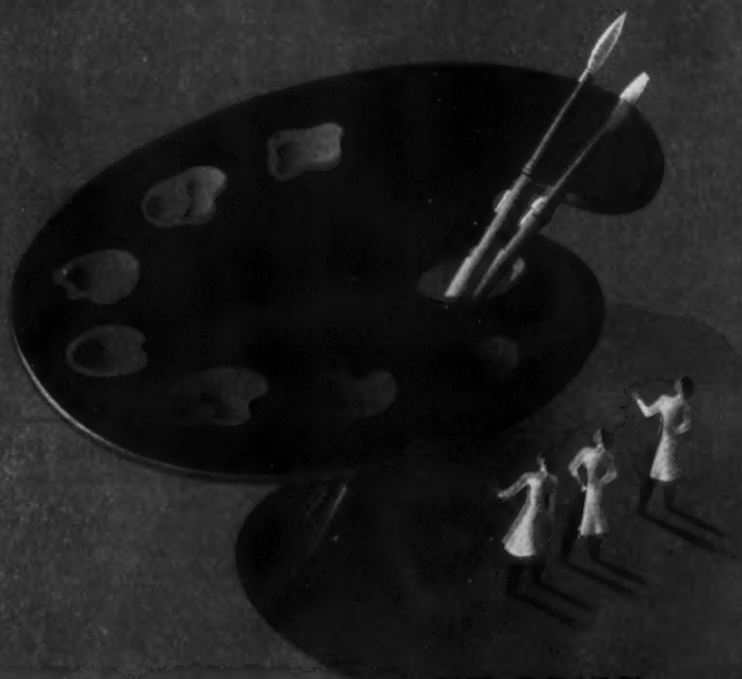
In this war, more than in any other war in history, victory depends on broad strategic planning. For huge land, sea and air forces must be distributed over vast areas and deployed into positions of tactical advantage from which decisive blows may be struck. This calls not only for military skill but for the specialized skills for which America is famous—technical ingenuity, mechanical ability and especially the application of "mass" methods to production, transportation, construction and the use of many technical sciences on a large volume scale. Indeed, America possesses that vital "Margin of Experience" in these activities which permits strategic planning on an unprecedented scale and has already established the framework for the final victory.

In every field of science, commerce and industry, this "Margin of Experience" proves again and again to be a factor vital to success. Niagara offers it in the field of electro-chemical products. For Niagara has pioneered constantly in the development, improvement and adaptation to new uses of Liquid Chlorine, Caustic Potash, Caustic Soda, Carbonate of Potash and Paradichlorobenzene. Rely on Niagara's "Margin of Experience" for greater success in the use of these products.

AN ESSENTIAL PART OF AMERICA'S GREAT CHEMICAL ENTERPRISE

Niagara ALKALI COMPANY
60 East 42nd Street, New York 17, N. Y.
CAUSTIC POTASH • CAUSTIC SODA • PARADICHLOROBENZENE
CARBONATE OF POTASH • LIQUID CHLORINE

ADVENTURES IN THE "MARGIN OF EXPERIENCE"



THE COLOR PROBLEM GROWS

Often the solution of one problem means the creation of another.

For example, the introduction of new or improved processes may create color problems for the dyer. Add to this the lower grade of materials available today, and these problems may swell to serious proportions.

When such problems arise, the Technical Staff of Du Pont's Laboratories stands ready to place its fund of knowledge and experience at your disposal. E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Division, Wilmington 98, Delaware.

Du Pont Dyestuffs

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

DU PONT DYESTUFFS

Asks Cooperation on Car Shortage

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 25, 1945 — The pulp, paper and paperboard industries have been asked to cooperate on all transportation problems in an effort to relieve the present car shortage, the War Production Board said today.

Members of the Pulp, Paper and Paperboard Transportation Industry Advisory Committee, in session here recently, were told that, while the most serious of the problems was a freight-car shortage of between 18,000 and 20,000 a day, the lack of suitable trucks and tires also was hindering receipt of supplies and delivery of paper products by many paper mills. Facilities for shipments by water on the St. Lawrence River and the Great Lakes were said to be adequate for the delivery of pulpwood from Canada.

Car loading figures have dropped below those of last year, and some decline in average carloads was reported. The average weight per car has shown a steady decline the past year. The industry was urged to see to it that all cars used were loaded to capacity with paper, paperboard and paper products, material to fill Government orders, which some members had previously believed did not call for full car shipments. WPB transportation officials emphasized the necessity of obtaining special permits when shippers are unable to meet Office of Defense Transportation 18-A and 18A-1 loading requirements, regardless of who the purchaser may be.

Outlining some of the other essential car-utilization factors, officials mentioned the following: advance shipment planning, specification of exact number of cars required, anticipation of unloading from either side of cars, expeditious loading and unloading, early release of cars both loaded and empty, careful cleaning of unloaded cars, and utilization of Sundays and Saturdays for loading and unloading cars where practical.

The over-all transportation problem, due chiefly to the present uneven distribution of cars and the truck and tire shortage, will probably extend for a year after V-E Day, it was predicted.

Following the announcement of the retirement of Frank Hufford, government presiding officer of the meeting and transportation consultant for the Paper and Paperboard Divisions, who is leaving the War Production Board to return to the paper industry, the committee unanimously recorded a vote of thanks to Mr. Hufford for his earnest service in behalf of the industry and WPB.

Changes in the committee membership included the retirement of Robert Henderson, of the Minnesota and Ontario Paper Company, and Harry Ratliff of the Champion Paper and Fiber Company.

William Thornton of Kimberly Clark was named as a new member of the committee.

Boston Bagging Prices Strong

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 23, 1945—Prices of bagging are strong. Paper mills will pay 3.50 for strictly No. 1 burlap bagging, delivered, and 3.75 for Australian wool pouches. Soft jute ropes are selling at 4.50 and 5.00.

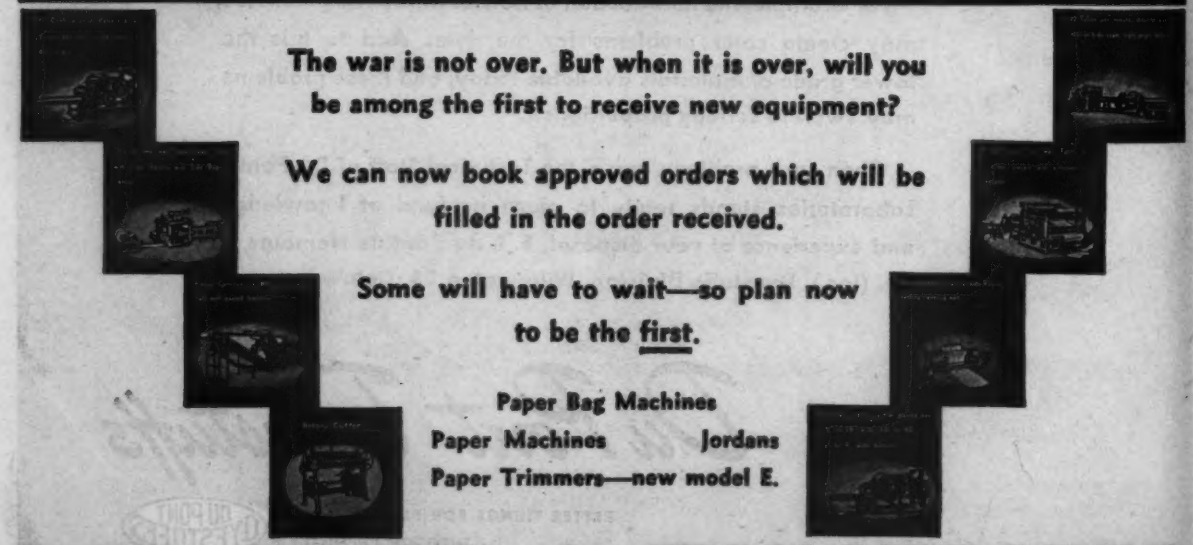
The new regulations of the OPA on waste paper do not affect the price, but occasion more detail in regard to invoicing, such as separate weights, truck numbers, car numbers and exact classifications in order to prevent black market operations.

SINCE 1828 — CONTINUOUSLY WE HAVE SERVED THE PAPER INDUSTRY.

The war is not over. But when it is over, will you be among the first to receive new equipment?

We can now book approved orders which will be filled in the order received.

Some will have to wait—so plan now to be the first.



Paper Bag Machines
Paper Machines Jordans
Paper Trimmers—new model E.

THE SMITH & WINCHESTER
MANUFACTURING COMPANY
PLANT AND OFFICES AT SOUTH WINDHAM, CONNECTICUT

Controlled Tension from START to FINISH

for PAPER MILLS and PAPER CONVERTERS

Shockless Starting • Variable Speed • Smooth Acceleration • Easy Threading and Inching

Assures Perfect Control of COATERS, REELS, SLITTERS, REWINDERS, Etc.

HORTON Variable Speed CLUTCH PULLEY

HORTON MANUFACTURING COMPANY

3012 UNIVERSITY AVENUE S. E., MINNEAPOLIS 14, MINN.

TAPPI Notes

Curt A. Young, mechanical engineer for the West Virginia Pulp and Paper Company, is now located at the Charleston, S. C. mill.

James L. Madden is now president of Hallingsworth & Whitney Company, Boston, Mass.

Richard W. Porter, formerly of the Brown Instrument Company and the Crown Zellerbach Paper Corporation, is now assistant editor of Chemical and Metallurgical Engineering.

The Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York 17, N. Y., would like to obtain all or part of Volume 1 of the Pacific Pulp and Paper Industry to complete its set of bound volumes of this publication.

The TAPPI Maine-New Hampshire Group will meet at the Elmwood Hotel, Waterville, Maine on May 11, 1945.

The TAPPI Watertown Group, Empire State Section, will meet jointly with the New York-Canadian Division of the Superintendents Association at the Cornwallis Hotel, Cornwall, Ontario on May 18-19, 1945. Friday morning will be devoted to registration. In the afternoon there will be visits to the mills of the Howard Smith Paper Company in Cornwall, the Provincial Paper Mills at Mille Roche and to the Courtaulds Rayon Plant. Tea will be served for the ladies at 4 P.M. and a dinner in the evening. On Saturday Walter Couture of the Dilts Machine Company will discuss "Impeller Agitation"; George Tomlinson of the Howard Smith Paper Mills will talk on "Laminated Plastics" and F. C. Goodwill of the St. Regis Paper Company and Russell Mills of E. I. du Pont will present a paper on the "Peroxide Bleaching of Groundwood." Following a buffet luncheon there will be a golf tournament and buffet dinner and dance at the Cornwall Country Club.

Michigan Superintendents Meet

KALAMAZOO, Mich., April 23, 1945—The Michigan Division of the American Pulp and Paper Mill Superintendents Association held its April meeting on Thursday evening of last week at the Park American Hotel. Fifty members and affiliates were in attendance.

Division chairman Joe Waber presided and announced that the committees in charge of arrangements for the annual Ladies Night Dinner, to be held on the evening of May 5, had completed arrangements and promised the usual successful party. He appointed a nominating committee to select candidates for new division officers to be elected at the October meeting.

National president, Ray L. Barton, announced the holding of the Miami Valley joint meeting of TAPPI and the Superintendents Association to be held in Middletown, definite date to be given later, and suggested a Michigan delegation attend. Ollin W. Callaghan of Edgar Brothers is on the program for a paper on clay.

Through the courtesy of Geo. V. Watson, resident manager of the Sinclair Refining Company, two interesting films were shown, one showing the proper methods of packaging war materials for shipment to battle areas, the other, with sound effects, released by the Signal Corps, showed the Invasion of New Britain. The films were in charge of Fred Maliszenrski, himself a discharged veteran of that campaign. The pictures created favorable comment and were thoroughly appreciated by those present.

Trinity Bag & Paper Co., Inc.

25 WEST 43rd STREET • NEW YORK 18, N. Y.

Mill Agents and Distributors

PAPER BAGS AND SACKS
All Types and Styles
Self-Opening, Square
Flat and Sacks

WRAPPING PAPERS
Kraft—Bleached and Unbleached
Butchers—Dry and Water Finish
M. G. Papers—Bleached and Unbleached

WRITINGS
Bonds and Ledgers
Index

OTHER GRADES
Envelope, Offset and Printing
Gumming—Bleached and Unbleached
Kraft Specialties of all Descriptions — both Bleached and Unbleached

Agents for:

FLORIDA PULP & PAPER CO., PENSACOLA, FLA. • SANTA ROSA PULP & PAPER CO., PENSACOLA, FLA.

BAG PLANTS AT MOBILE, ALABAMA, AND MONROE, LA.

1000 POUNDS OF STAINLESS ENDURANCE CAST BY *Cooper*

This blow-valve body is but one example of a superior stainless casting service available to sulphite mills—from Cooper. A casting service that includes standard analyses, or special compositions; heat-treatment and Dentacast castings. A service that produces sound corrosion-resistant castings for upper sleeves, covers, strainers and bottom sleeves for digesters; flanges, flanged fittings and valves for general use. All are made with the invaluable experience gained in the special requirements of sulphite-mill service since 1928.

THE COOPER ALLOY FOUNDRY CO.
145 BLOY ST., HILLSIDE, N. J.

THE ONLY ALLOY FOUNDRY WITH ALL THESE FACILITIES

- Laboratory control over raw materials and finished products.
- Dual foundry . . . both hand and machine molding.
- Electric arc and high-frequency-induction melting furnaces.
- Centrifugally-cast castings.
- Heat treating of Castings up to six feet.
- X-ray and Gamma-ray inspection.
- Precision Castings.
- Machine shop . . . specially equipped for finishing stainless steel.
- Improved cleaning . . . including Lustracast electrolytic finishing which leaves all surfaces bright.
- Castings furnished rough, polished or fully machined . . . one ounce to two tons.
- Development of special alloys to meet unusual requirements.
- Technical consulting service.
- Zyglo detection of surface imperfections.

THE COOPER ALLOY FOUNDRY CO.

STAINLESS • MONEL • NICKEL

Obituary

Herbert J. Brown

PORTLAND, Me., April 23, 1945 — Herbert J. Brown, 83, for 30 years president of the Brown Company, died April 16 at his Falmouth-Foreside residence. He had been retired since 1935.

Long prominent in Portland financial circles and philanthropies, he had been president of the Maine Savings Bank, the First National Bank, the Maine General Hospital and the Home for Aged Men. He held membership in the Portland Provident Society; during the World War, he was state chairman of the Liberty Bond drives. He was a former trustee of Williams College, whence he was graduated in 1885, after having prepared at Phillips Academy, Andover, Mass.

He became associated with the Brown Company at Berlin, N. H., before returning to Portland, in 1905, to assume the presidency of what was then the largest paper manufacturing concern of its kind.

He was a member of the Cumberland Club and the Portland Club.

Thomas S. Hodgson

BRONXVILLE, N. Y., April 23, 1945 — Thomas S. Hodgson of 13 Beacon court and southern district manager of the Union Bag and Paper Corporation, 233 Broadway, New York, was killed in an airplane accident in West Virginia on April 14. Mr. Hodgson, who was 42 years old, was a native of Chicago.

He was graduated from Culver Military Academy in 1921 and received his Bachelor of Science degree from the Wharton School, University of Pennsylvania in 1925. He was intercollegiate diving champion, a varsity baseball player and a member of the Delta Tau Delta Fraternity. He was a member of the Salesmen's Association of the Paper Industry.

He was engaged in the real estate business in Evanston, Ill., before joining the sales organization of the Union Bag and Paper Corporation in 1930. He became western sales manager of the corporation in 1940. In 1941 he was transferred to the New York office and in 1943 was appointed southern district manager.

He is survived by his widow, Beatrice Tomlinson Hodgson; a son, Thomas S. Jr., and a daughter, Diane Rex.

Perry A. McCaskey

Perry A. McCaskey, Cleveland, Ohio, inventor and businessman, died April 13 in his apartment in Park Lane Villa.

Mr. McCaskey, 77, gave his name to one of his inventions, the McCaskey register, for many years one of the best known of store appliances. He organized the McCaskey Credit Register Company in Alliance to manufacture it.

Other companies he was identified with are: Minerva Wax Paper Company, Minerva, O., of which he was organizer and president until 1944; Carbon Coated Paper Company, Sturgis, Mich., of which he was founder; Potter Press, Waltham, Mass., of which he was organizer and for a number of years president.

Surviving are his wife, Mrs. Margaret Hughes McCaskey; a son, Rankin C. McCaskey, vice-president and sales manager of the Minerva Wax Paper Co., and a grandchild.

John E. Hatt

John Earl Hatt, 64, manager of the cellophane division of E. I. duPont de Nemours & Co., Wilmington, Del., died suddenly April 13 of a heart attack at his home in suburban Greenville, Del. He had been ill since Tuesday.

A native of Marion, Ind., Mr. Hatt was general sales manager of Harrison Bros. & Co., Philadelphia paint manufacturers, when that concern was acquired by du Pont in 1917. He became director of sales for duPont paints and varnishes. From 1920 to 1928, Mr. Hatt was manager of offices in Seattle and Chicago for the duPont explosives department. He became general manager of the duPont Cellophane Co., Inc., in 1928 with offices in New York. When that company became the cellophane division in 1937, he was made division manager.

To Study Plans for Newsprint Mill

ATLANTA, Ga., April 23, 1945—Directors of the Southern Newspaper Publishers' Association will meet here May 28-29 to consider several business matters, including a report from the newsprint mill committee on its plans for the postwar expansion of the program to make newsprint from Southern slash pine.

George C. Biggers, vice president and general manager of *The Atlanta Journal,* is president of the association, and Charles P. Manship, publisher of the Baton Rouge *State-Times and Advocate,* is chairman of the board. Mr. Manship called the meeting.

Walter C. Johnson, secretary-manager of the association, said in Nashville plans of the newsprint mill committee call for the erection of another mill in the South. One mill now is operating in Lufkin, Texas. Carl B. Short, of the Roanoke (Va.) *World News,* is chairman of the committee.

Motion Pictures Pertaining to Paper

The American Pulp and Paper Mill Superintendents Association, in response to repeated inquiries as to the available motion pictures pertaining to the pulp and paper industry, has made a survey of this subject and issued the results in pamphlet form. The number of these films and pictures outlined is surprisingly large and interesting. Copies of the pamphlet may be obtained by addressing George W. Craigie, secretary of the American Pulp and Paper Mill Superintendents Association, 220 East 42nd street, New York 17, N. Y.

Paperboard Men Named By WPB

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 25, 1945—W. Irving Osborne, Jr., of Chicago, president of the National Paperboard Association, the Hummel and Downing Company, of Milwaukee, Wis., and the Cornell Wood Products Company of Chicago, has been named deputy director of the Paperboard Division of the War Production Board, Benton R. Cancell, director of WPB's Forest Products Bureau, announced today.

Mr. Osborne will be chief assistant to Ralph A. Powers, director of the division.

River Raisin Gets Army-Navy "E"

MONROE, Mich., April 16, 1945—The River Raisin Paper Company has been awarded the Army-Navy "E" for excellence in war production.

How to Stretch Your Supply of Hooker Chemicals

Our relations with the pulp and paper making industry over a long period have been so pleasant that it bothers us when we can't supply you with all the Hooker chemicals you need. One of the things you can depend on is that the quality and purity of the Hooker chemicals you are receiving are of the same high standards you have always had.

We are also trying to help you stretch your supply of Hooker chemicals—make them do more for you. Our Technical Staff has been working with the pulp and paper industry—helping to improve processes, effect economies and raise quality. Many of their findings and recommendations are available in printed form and may be of help to you in this critical period. A few of the most recent bulletins are listed below.

Bleaching Gumwood Sulfate Pulp . . . Bul. 241
Cellulose Developments . . . . . Bul. 210
Bleaching Procedure Design For High White High Strength Kraft Pulps . . . . . Bul. 233
The Lime Chlorine System in the Preparation of Calcium Hypochlorite . . . . . Bul. 234
Production and Use of Unsettled Bleach Liquor . . . . . Bul. 242
Procedures and Brightness Grades in Bleaching Sulfate Pulps . . . . . Bul. 243
Objectives in the Various Stages of Pulp Purification . . . . . Bul. 239

A request on your letterhead will bring copies to you. And if you need help on any specific problem involving Hooker Chemicals, our Technical Staff is at your service.

ARMY E NAVY

HOOKER ELECTROCHEMICAL COMPANY

6 Union St. Niagara Falls, New York
New York, N. Y. Tacoma, Wash.
Wilmington, Calif.

HOOKER CHEMICALS

CAUSTIC SODA • CHLORINE • SODIUM SULFIDE
BLEACHING POWDER

5273

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending April 21, 1945

STOCKS

	High	Low	Last
A. P. W.	5	5	5
Armstrong Cork Co.	49¼	46	49⅛
Celotex Corp.	16⅜	15⅞	16⅛
Celotex Corp., pf.	20¼	20	20
Certain-Teed Products Corp.	9⅜	8⅞	9
Certain-Teed Products Corp., pf.	150	150	150
Champion Paper & Fibre Co.	33½	33	33⅛
Champion Paper & Fibre Co., pf.	113½	112	112¾
Congoleum Nairn Co.	30½	29¼	29¾
Container Corp. of America	29⅜	28	29⅛
Continental-Diamond Fibre Co.	12	11½	11¾
Crown-Zellerbach Co.	23	22¼	23
Crown-Zellerbach Co., pf.	104¾	104¼	104⅛
Dixie Cup Co.	19¼	18½	19¼
Dixie Cup Co.—A	48½	47½	47½
Flintkote Co.	30½	28⅜	30½
Flintkote Co., pf.	105¾	105¾	105¾
Robert Gair	6¼	5⅜	6¼
Robert Gair, pf.	17½	16¾	17⅜
International Paper Co.	25⅜	24⅛	25⅜
International Paper Co., pf.	91½	90	90¾
Johns-Manville Corp.	119	115	119
Johns-Manville Corp., pf.	...	...	...
Kimberly-Clark Corp.	45	43½	45
Mac Andrews & Forbes	32⅞	32¼	32⅛
Mac Andrews & Forbes, pf.	...	...	...
Masonite Corp.	43¾	42¾	43⅜
Mead Corp.	14¼	13⅛	13¾
Mead Corp., pf. A—6%	105⅛	105	105
Mead Corp., pf. B—5½%	99⅛	96	99⅞
National Container Corp.	15¾	15¼	15⅜
Paraffine Companies, Inc.	65	61½	64
Paraffine Companies, Inc., pf.	...	...	...
Rayonier, Inc.	18⅞	17¾	18½
Rayonier, Inc., pf.	36⅝	36½	36½
Ruberoid Co.	37¾	36¼	37¾
Scott Paper Co.	48	46½	47½
Scott Paper Co., pf.	110½	109	109
Sutherland Paper Co.	33	31½	32¼
Union Bag & Paper Corp.	16¾	16	16⅜
United Paperboard Co.	6¾	6¼	6¼
U. S. Gypsum Co.	88	83½	83½
U. S. Gypsum Co., pf.	191	191	191
West Virginia Pulp & Paper Co.	25¾	24	25½
West Virginia Pulp & Paper Co., pf.	112	111	112

BONDS

Abitibi Pulp & Paper Co. 5s '53	104	102⅞	104
Celotex Corp. 3¾s '55	...	...	...
Certain-Teed Products Corp. 5½s '48	...	...	...
Champion Paper & Fibre Co. 4¾s '50	...	...	...
International Paper Co. 6s '55	110	109	109
International Paper Co. 5s '47	104¼	104¼	104¼
Mead Corp. 3½s '53	...	...	...
West Virginia Pulp & Paper Co. 3s '54	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending April 21, 1945

STOCKS

	High	Low	Last
Great Northern Paper Co.	37¾	37	37
Hummel-Ross Fibre Corp.	7¼	7⅛	7⅛
St. Regis Paper Co.	6⅜	5⅞	6
St. Regis Paper Co., pf.	...	...	...
Taggart Corp.	...	...	...

BONDS

American Writing Paper Co. 6s '61	...	...	...

Johns-Manville Profits Off

The Johns-Manville Corporation and subsidiaries for the March quarter reports net sales of $22,469,717, and net profit, $1,395,598, after a provision of $210,000 for contingencies and $1,926,671 for taxes, equivalent to $1.64 a common share, after dividends on the preferred stock outstanding at that time, compared with net sales of $24,450,541, and net profit of $1,451,566, or $1.66 a share, in the corresponding period of last year, after a deduction of $210,000 for contingencies, and Federal taxes of $2,480,437.

Sutherland Co. Nets 49 Cents

The Sutherland Paper Company for the March quarter reports a net profit of $140,429, equal to 49 cents a share, after a reserve of $60,000 for contingencies, compared with $169,981, or 59 cents a share, in the first three months of last year, after a similar deduction for contingencies.

To Appraise Great Lakes Property

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 23, 1945—The Great lakes Power Company is reported to have employed an engineering firm to make an appraisal of its property, in order to have an independent report before proceeding with negotiations with the Hydro-Electric Power Commission of Ontario. Until this appraisal is completed no further action is likely to be taken regarding the acquisition of the power plants and transmission lines of the Company by the Hydro Commission, it is understood.

Flintkote Co. Earns Less

The Flintkote Company and its subsidiaries in a report issued yesterday for the twelve weeks ended on March 24 shows net income of $324,530 after providing $789,969 for Federal income and excess profits, State and foreign taxes and $40,000 for contingencies arising out of war conditions, including possible renegotiation. After allowing for dividends on the preferred stock, this is equivalent to 28 cents each on 1,014,408 shares of common stock, and compares with a net profit of $317,883, or 39 cents a share, in 713,706 shares in the twelve weeks to March 25, 1944, after deducting $692,075 for taxes and $50,000 for contingencies.

To Pay on Abitibi Bonds in June

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 23, 1945—Payment of the second amount of $43.07 per $1,000 Abitibi Power and Paper Company 5% bond will be made on June 1, 1945. This payment is to be applied to principal and will involve the sum of $2,078,860. Investors owning Abitibi bonds may count of receipt of this money in deciding on their subscription to the eighth Victory loan. The newest Victory loan is for $1,350,000, dated and bearing interest from May 1, 1945, and offered in two maturities, the choice of which is optional with the purchaser. One is for 18 years and five months at 3%, due October 1, 1963, callable in or after 1959, interest payable April and October. The other is for four years and six months at 1¼%, due November 1, 1949, non-callable to maturity and interest payable May and November.

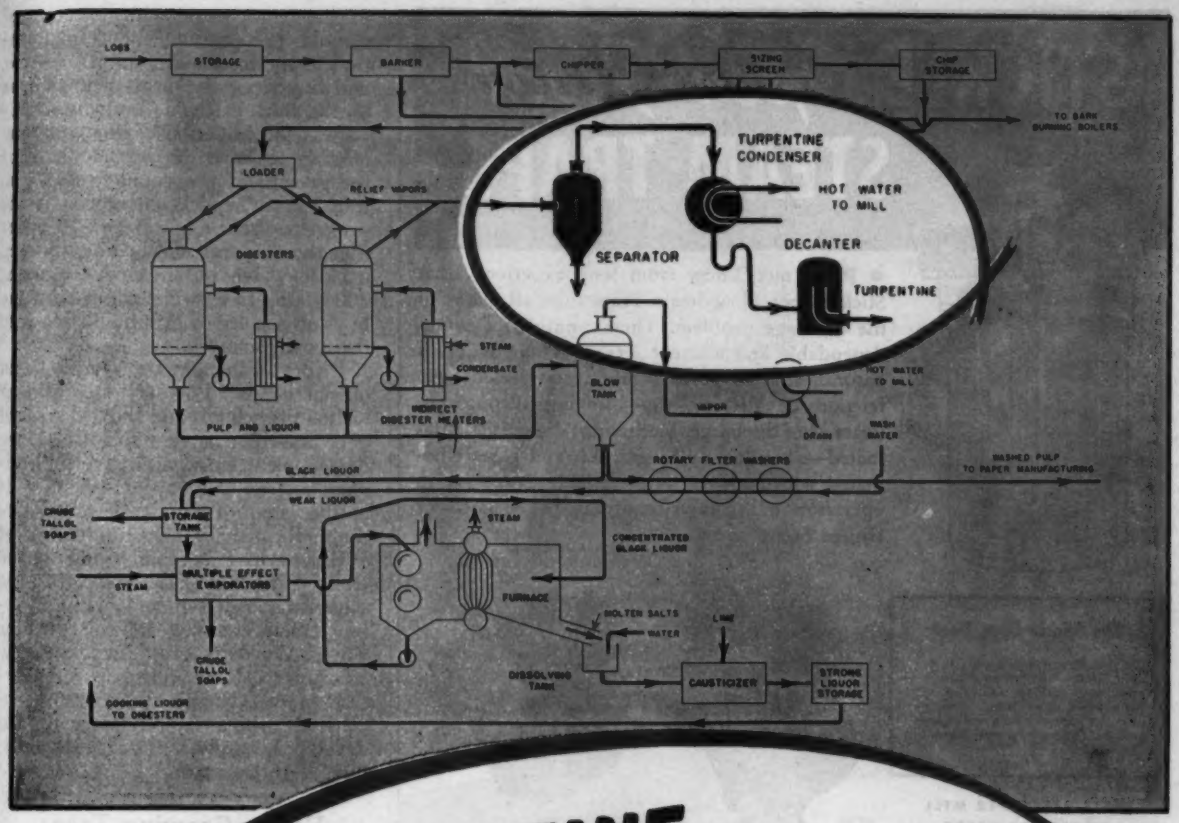
Consolidated Refunding Defined

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 23, 1945 — Consolidated Paper's bonds will have to wait at least six months before being refunded. It is now too late to give the required 90-days' notice in redemption of the present bonds on the next interest date, July 2. The other interest date is January 2. It is reported that at least one investment firm has discussed the possibility of a new issue, to be marketed partly in New York and partly in the domestic market.

David Luke Jr. Elected Director

David L. Luke Jr., president of West Virginia Pulp and Paper Company, has been elected to the board of directors of the Irving Trust Company, New York. Mr. Luke has been associated with West Virginia Pulp and Paper Company, a producer of white and kraft papers since his graduation from Yale University in 1922.



TURPENTINE RECOVERY FROM SULFATE DIGESTERS

Thirty thousand dollars worth of turpentine can be recovered yearly from a 200 ton pulp mill.

This figure is indicative of the substantial savings made with the installaton of a Foster Wheeler turpentine recovery system. The system, comprised of a cyclone separator, turpentine condenser and turpentine decanter, is easy to install, low in maintenance and highly efficient in operation.

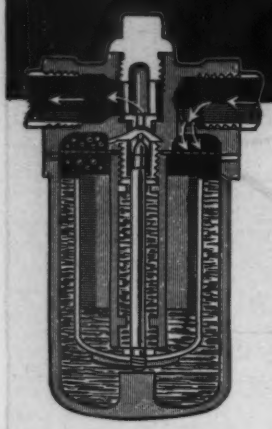
Not only is a valuable by-product salvaged but heat can be recovered for use in plant operation.

During the past eight months four of these units have been installed on existing mills and in every case first costs will be more than met in the first six months.

FOSTER WHEELER CORPORATION
165 Broadway New York 6, N. Y.

FOSTER WHEELER

STICKLE *Open Float* STEAM TRAPS



● **Paper men know from long experience that Stickle Open Float Steam Traps solve all phases of the drainage problem. They supply continuous, dependable and efficient service. Their action is natural, simple, positive and instantaneous. No friction or sticking—no blowing through of steam after discharge. Mechanical difficulties eliminated—no levers or hinges. Air and gases eliminated with each discharge. Stickle Traps are in operation in a majority of the paper mills of United States and Canada.**

The Stickle Open Float

Stickle Open Float is basic to every Stickle Trap. It supplies simple and positive operation. It eliminates complicated mechanism. Its natural action makes possible a rhythmic never-tiring performance.

MEET ALL PAPER MILL DRAINAGE NEEDS

There is a series design and size of Stickle Steam Trap for any paper mill drainage requirement: Series T Traps for low and medium pressures and for vacuum service (Bulletin No. 415). Series AE to meet large capacity requirements at medium and high pressures (Bulletin No. 315). Series 100—straight-in-line installation—to meet smaller capacity needs at medium and high pressures (Bulletin No. 115).

Other Stickle Equipment for Paper Mills

Stickle Drainage and Control—a complete system making possible maximum efficiency in paper drying with decreased cost of production. Bulletin No. 260.

Stickle Reducing and Regulating Valves—especially designed for rigid paper mill accuracy, sensitivity and dependability requirements. Bulletins Nos. 235 and 435.

Stickle Open Coil Feed Water Heater—in all required sizes. Deaerating and non-deaerating. High efficiency with low cost operation and maintenance. Bulletin No. 117.

Stickle

STEAM SPECIALTIES COMPANY

2215 VALLEY AVENUE • INDIANAPOLIS, INDIANA

Reforestation Experiment

Utilization of voluntary labor as an interesting experiment in reforestation was tried out recently at Powell River, British Columbia. The experiment was launched at the instigation of Harold S. Foley, president of the Powell River Company Limited.

Under the guidance and instruction of Forestry Department officials and the Powell River Company's Engineering Department, a group of 72 Brooks High School boys spent a full day in the area of Wildwood Heights, adjoining Powell River, where 10,000 young fir trees were planted in ground previously prepared by the Powell River Company. The young two-year old trees, about 12 inches long, were supplied by the Forestry Department from their Green Timber Nurseries near New Westminster, and were planted at 6 feet centres in either direction and the day's planting about 11 acres of ground belonging to the company.

The boys enthused over their voluntary labors given in the cause of the lumber supply for a future generation, and a great spirit of co-operation was evinced in this experimental work, with the costs of ground preparation, the transportation of the trees and young foresters, and the necessary meals being borne by the Powell River Company.

It is the intention of the company officials to have the boys look after the growth of the young trees from time to time, and keep records of the progress of the experiment. In order that the students will be able to keep a close watch on the growth, about 200 of the trees were planted by the boys on a piece of ground adjacent to their own school.

Prior to the day of planting, an official of the Forestry Department visited the schools and showed several very fine color movie films of forestry development work, and gave preliminary instructions to the students. It is the hope of the local authorities that a branch of the Junior Forest Wardens may be established in the District and already some of the schools have elected students to represent their fellows in this Junior Forest Wardens' group which is now being carried on under the sponsorship of the Canadian Forestry Association, which is endeavoring to develop the study, care, and preservation of forest areas.

Faster-Growing Trees

That tree breeding has hardly scratched the surface and that infinite possibilities lie ahead, is the opinion of Dr. Ernest J. Schreiner, graduate of the New York State College of Forestry at Syracuse University, now with the U. S. Forest Service, and a pioneer in the development of faster-growing trees. For the past 20 years he has been investigating the heredity and variation of individual trees and determining how new strains with faster-growing habits can be developed.

He has produced poplar trees in Maine that will grow six feet in a year from unrooted cuttings planted in fair soil. In Tennessee he has produced hybrids that have grown more than ten feet in a year. A statement from the College says that if the growth period of commercially valuable trees can be reduced one half, one of the principal difficulties in production of profitable forests will have been overcome.

Dr. Schreiner states that by a very conservative estimate some of his poplar hybrids have grown from two to three times as fast as native poplars. The wood of these trees is just as good as native poplar for paper pulp, and for certain chemical uses may be somewhat better. Recently he has been breeding birch, ash, maple, oak and other forest trees.

T. L. Hines Made Manager

Thomas L. Hines, general assistant manager of the Cellophane Division of E. I. duPont de Nemours & Co., has been appointed manager. He succeeds John E. Hatt, who died recently of a heart attack.

A native of Chestertown, Md., Mr. Hines studied engineering at Maryland State College, now the University of Maryland. He has been with the duPont Company since November 1, 1915.

He began as an assistant supervisor at the Carney's Point, N. J., smokeless powder plant and after two years, was transferred to the Engineering Department, working at Wilmington and Old Hickory, Tenn.

In December, 1919, he became a supervisor at the Arlington, N. J., plant of the Cellulose Products Manufacturing Department and later production superintendent. He remained there until after his transfer to the duPont Viscoloid Company in May, 1925.

Four months later Mr. Hines became manufacturing superintendent at the Old Hickory rayon plant. In December, 1925, he was named assistant plant manager and in August, 1927, became plant manager at Old Hickory.

Mr. Hines was named assistant general manager of the duPont Cellophane Company three years later. When this company became the Cellophane Division of the Rayon Department, he was made assistant manager and recently was made general assistant manager.

Robert L. Richards will continue as assistant manager of the division under Mr. Hines.

Howard Mill Ads Praised

Appearance of high quality art in war time advertising, produced for a group of paper mills and published in the trade papers of the paper and printing industries during the past year, has brought considerable recognition and praise from leading art and advertising authorities throughout the United States.

Forceful, dignified and attention-getting art work, supported by concise and to-the-point advertising copy, used by the Howard Paper Mills, the Maxwell Paper Mills, the Aetna Paper Mills and the Dayton Envelope Company, brought national consideration to this group recently.

Three of these advertisements were submitted upon invitation to the Art Directors Club of Chicago, and of the group, the "Archway of a New World," using the world famous Arc de Triomphe in Paris as the principal motif, was selected as a splendid example of paper mill advertising. It appears in the Art Show being held during May in the Art Institute of Chicago.

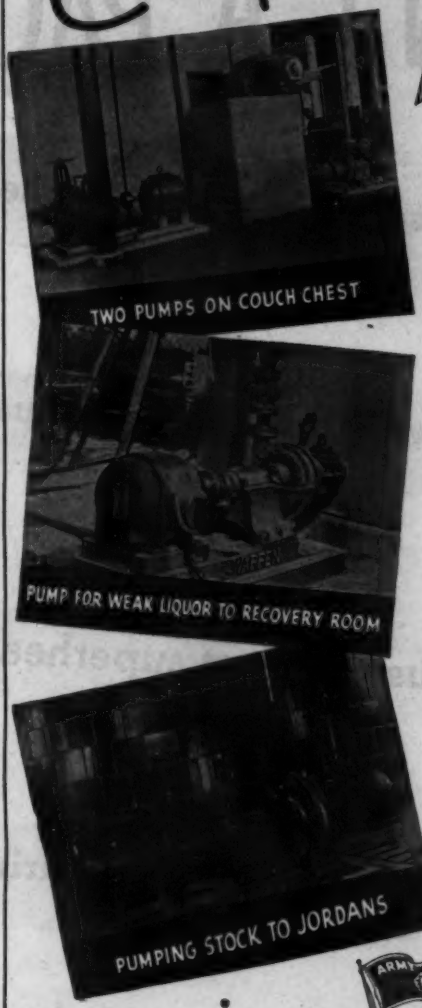
These advertisements were also shown in the art shows of the Dayton Advertising Club and the Art Center, Dayton, during January and February.

The original art, together with proofs of the advertisements, will appear in the Chicago art show. They will also be included in the traveling art show, scheduled to be in Minneapolis in June; in Racine, Wis., July 15-August 15; in Milwaukee in September; in Toledo in November, and probably in St. Louis in December.

Each of the paper mills participating in this distinctive type of advertising has received scores of compliments from their customers as well as other interested persons in and out of the paper industry. Such high quality of art and character of advertising tends to foreshadow the approach of an apparent new trend in paper mill advertising, many of those extending their congratulations intimated in their letters.

All art and advertising copy work for these advertisements were prepared under the direct supervision of Kircher, Lytle, Helton & Collett, Dayton, Ohio, advertising agency, which handles the advertising account for this group of well-known paper mills.

Check with Warren for SUCH SERVICES AS:



Black Liquor
Bleached Liquor
White Water
Showers
Boiler Feed
Green Liquor
Stock — thick and thin
Wash water — hot and cold
Caustic
Underwater Fire

Why Warren? Because Warren Paper Mill Pumps not only stay with their jobs and protect against costly service interruptions, but they handle their jobs, year after year, at consistently low operating and maintenance costs.

FOR ALL PAPER MILL REQUIREMENTS, SPECIFY:

WARREN PUMPS

ARMY NAVY "E"

WARREN STEAM PUMP COMPANY, INC.
WARREN, MASSACHUSETTS

"I WANT A PACKING...

...for service against concentrated acids."

...to withstand strong caustics."

...for use against superheated steam."

...to keep dirt out of bearings."

...for service against solvents."

WHATEVER *your* special packing problem, you'll find that you can solve it efficiently with a Johns-Manville packing.

For J-M specialized packings are made to withstand the higher pressures and temperatures, the intensified corrosive attacks, and the stepped-up frictional wear encountered in today's industrial processes.

The *right* packing is as important to continued, trouble-free machine operation as any other single factor. And in the complete J-M line, there is a packing that's designed for any set of service conditions in the process industries.

The Johns-Manville engineering staff, specialists in packing service for over 70 years, will gladly help with your problems. Write Johns-Manville, 22 East 40th Street, New York 16, New York.

Johns-Manville

PACKINGS & GASKETS

THERE'S A DISTRIBUTOR NEAR YOU

Sutherland

CONTINUOUS BEATING and REFINING SYSTEM

★

1 SUTHERLAND

ONE (1) SUTHERLAND ALONE completely treats stock for 50 ton Fourdrinier making Bristol, label and specialties.

SUTHERLAND REFINER CORPORATION

TRENTON, NEW JERSEY

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Empire State Section. Technical Association of the Pulp and Paper Industry—Second Thursday of each month at the Woodruff Hotel, Watertown, N. Y.

Chicago Professional Paper Group. Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

MORE PAPERBOARD NEEDED

Paperboard requirements for all-over government consumption are increasing. To meet these essential needs, which consist largely of more containerboard and building boards, additional wood pulp has been made available. The recommended minimum authorization in the current second quarter indicates that paper output will be decreased about 79,000 tons and paperboard production will be increased some 48,000 tons. Total minimum paperboard output in the second quarter has been authorized at 2,420,000 tons, for which 1,003,000 tons of wood pulp have been allocated. This compares with 2,372,000 tons of paperboard and 982,000 tons of wood pulp in the first 1945 quarter. In the second 1944 quarter, authorizations aggregated 2,325,000 tons of paperboard, for which 984,000 tons of wood pulp were allocated. These estimates are, of course, subject to revision but it is anticipated that the changes will be of minor importance.

Production of paperboard in January, 1945, totaled 746,000 tons, compared with 724,000 tons in January, 1944. The average monthly output in 1944 was 748,000 tons; in 1943, 718,000 tons, and in 1942, 664,000 tons. During this period containerboard was the leading type, the monthly output being as follows: January, 1945, 346,000 tons; January, 1944, 340,000 tons, with a monthly average of 353,000 tons in 1944; 341,000 tons in 1943, and 313,000 tons in 1942. Folding boxboard production in January, 1945 was 185,000 tons, compared with 162,000 tons in January, 1944; with the monthly average 62,000 tons in 1944; 171,000 tons in 1943, and 143,000 tons in 1942. The output of set-up boxboard in January, 1945 was 59,000 tons, compared with 61,000 tons in January, 1944; with the monthly average 61,000 tons in 1944; 69,000 tons in 1943, and 83,000 tons in 1942. Cardboard output in January, 1945 was 6,000 tons, compared with 5,000 tons in January, 1944; with the monthly average 6,000 tons in 1944; 5,000 tons in 1943, and 4,000 tons in 1942. Building board production in January, 1945 was 88,000 tons, compared with 92,000 tons in January, 1944; with the monthly average production 91,000 tons in 1944; 89,000 tons in 1943, and 88,000 tons in 1942. Miscellaneous other board output in January, 1945 was 62,000 tons, compared with 63,000 tons in January, 1944; with the monthly average 59,000 tons in 1944; 44,000 tons in 1943, and 33,000 tons in 1942. Production of tube stock was 41,000 tons in January, 1945, compared with 42,000 tons in January, 1944; with the monthly average 38,000 tons in 1944; 14,000 tons in 1943, and 14,000 tons in 1942.

In its latest report on the paperboard supply situation for the second quarter the Department of Commerce states that containerboard production of 1,140,000 tons, is 22,000 tons above the first quarter program. However, this figure is tentative and is subject to revision. The shortage of kraft pulp has made it necessary, in order to attain the recommended production, to divert some wood pulp from the manufacture of kraft liner to jute liner. If the production of certain pulp mills should increase beyond the estimates on which the recommendation is based, additional pulp will be allocated for containerboard production. In addition to the recommended production of 1,140,000 tons of containerboard, an attempt will be made to secure the additional production in folding boxboard mills having suitable equipment. This might cause production of waste grade folding boxboard to fall below the recommended minimum.

According to the Department, recommended production of major types of paperboard for the second quarter will consist of 572,000 tons of folding boxboard, of which 96,000 tons are solid types, (such as food container stock) and 476,000 tons are waste grades. This represents, the report points out, an over-all increase of 13,000 tons above the first quarter program. However, the recommended production of solid grades is almost 3,500 tons below the first quarter level, the increase being confined to the waste grades. Production of set-up boxboard depends on supplies of waste paper and other waste materials, the amount of pulp consumed being less than 1% of the total board produced. The recommended second quarter production approximates the first quarter level. Second quarter recommended production of miscellaneous boards represent an increase of some 12,000 tons over the first quarter. This increase will have to be attained by the use of additional waste paper as the amount of wood pulp authorized has been held to the first quarter level. At a recent meeting of the Containerboard and Fiber Box Industry Advisory Committees proposals to increase the production of containerboard, particularly V-boxboard, and keep all mills in full operation were endorsed in principle. Proposed amendments to Containerboard Order M-290, including means for conserving kraft pulp, plan to insure a more equal distribution of containerboard so that all authorizations for board may be filled, and changes intended to provide more flexible

operation of the order were under consideration.

Relative to military requirements for V-board, the Department points out that they continue to increase. During the first two months of the first 1945 quarter, the level of authorized production of V-board was at a quarterly rate of 260,000 tons. Production for March was stepped up to 107,000 tons or a quarterly rate of 321,000 tons. For the second quarter of 1945 production of V-board has been recommended at 334,000 tons. This may be further increased to 350,000 tons. The demand for shell containers, shell bands, and other military items has also shown a substantial increase.

Tightens Control of Newsprint

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 25, 1945—Closer control over the distribution and use of newsprint, to insure its availability to users on a historical pattern, has been instituted by the War Production Board, WPB announced today. Under an amendment to General Conservation Order M-241, a certification is now required of every purchaser with each purchase of newsprint, stating that its use or placement in inventory will be pursuant to the Newspaper Order L-24 or the other printing and publishing limitation orders, WPB officials explained. Priorities Regulation No. 7 certification may not be used in the purchase of newsprint, it was pointed out.

Paper mills have orders for more newsprint than they can supply. It is the intention of WPB that regular established users of newsprint who purchase through dealers shall receive the same consideration as those who purchase directly from paper mills. However, the new certification has to be filed with each purchase, together with a breakdown of the delivery order setting forth the paper tonnage used under the particular WPB order, and manufacturers, merchants, or other persons are not permitted to fill an order without such information. The amendment affects newsprint purchases for use under the following Limitation Orders: L-177, L-240, L-241, L-244, L-245, L-289, L-294, and L-340, and also Conservation Order M-241-a.

Restrictions on the delivery of all other types of paper also are effected, but a so-called one-time certificate only is required. Such a certificate must set out to the seller and WPB that the purchaser is familiar with order M-241, controlling the production of paperboard, and that all his purchases of items regulated by the order will be used in compliance with its terms.

Another change in Order M-241 prescribes the method of determining the amount of paper subject to WPB reserve requirements as based on the monthly production which a manufacturer can produce, subject to his authorized use of pulp under M-93.

George D. Bearce Made Vice Pres.

BUCKSPORT, Me., April 23, 1945—Directors of the Maine Seaboard Paper Company have elected George D. Bearce vice president and John E. Cowles, controller of the company. This action was taken in recognition of the exceptional service given the firm by these two men, both of whom have been with the company more than ten years.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1945		Corresponding Weeks—1944	
Mar. 10	87.7	Mar. 11	88.5
Mar. 17	89.4	Mar. 18	90.7
Mar. 24	92.1	Mar. 25	88.5
Mar. 31	88.9	Apr. 1	85.7
Apr. 7	86.8	Apr. 8	86.2
Apr. 14	*87.4*	Apr. 15	84.7

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	88.7	88.5	88.1	87.6	88.7	89.8	80.3	90.6	88.2	92.5	90.6	82.4	88.1
1945	86.7	89.4	*90.2*										

COMPARATIVE YEARLY SUMMARIES

	1938	1939	1940	1941	1942	1943	1944	1945
Year to Date	67.3	79.9	85.0	89.9	103.1	88.7	88.0	*88.3*
Year Average	71.3	83.4	85.6	97.4	90.4	87.8	88.1	

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Current Weeks—1945		Corresponding Weeks—1944	
Mar. 10	94	Mar. 11	95
Mar. 17	95	Mar. 18	95
Mar. 24	99	Mar. 25	97
Mar. 31	100	Apr. 1	93
Apr. 7	92	Apr. 8	94
Apr. 14	97	Apr. 15	92

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	90	96	95	96	96	96	85	96	92	95	95	85	93
1945	91	95	*97*										

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

Pulpwood Receipts Decline

WASHINGTON, D. C., April 25, 1945—Total pulpwood receipts at United States paper and paperboard mills in March amounted to 1,486,113 rough cords, 2.5% below total receipts a year ago, according to a statement released by the War Production Board Forest Products Bureau today.

Over-all pulpwood consumption in March 1945 increased 7.4% over that in March 1944, but inventories showed a decline of 15.9%, WPB officials said.

Receipts by the five regions showed a decline over March 1944, except in the South, where an increase of 18.3% was noted. Consumption in the various regions was from 4.6 to 10.9% higher than a year ago, except in the Appalachian Region, where a slight decrease was reported. Inventories at the end of March showed a decline running from 12% in the South to 23% in the Appalachian area.

The following table shows March receipts, both domestic and Canadian, and consumption and inventories by regions, compared with March figures a year ago:

U. S. RECEIPTS, CONSUMPTION AND INVENTORY OF PULPWOOD BY REGIONS

March 1945 (Rough Cords)

Region	Receipts Domestic	Receipts Canadian	Total	Consumption	Inventory
Northeast	204,714	67,903	272,617	291,285	699,864
Appalachian	119,041	250	119,291	121,367	215,631
Lake States	233,874	36,131	270,005	229,080	1,246,690
South	640,332	.....	640,332	623,345	155,343
Pacific Northwest	176,690	7,178	183,868	226,585	328,373
Total U. S.	1,374,651	111,462	1,486,113	1,491,662	2,645,901

Heads Langan Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

DES MOINES, Iowa, April 13, 1945—Frank L. Townsend, vice president of the Langan Paper Company, was elected president at a meeting of directors held recently. He has been with the company 57 years.

ONE WAY TO FREE A PHONE FOR A FIGHTER . . .

When you need STAINLESS STEELS

CALL Industrial and the probability is your complete order for stainless steels will be handled promptly. You'll not be faced with the necessity of making a half-dozen long distance calls to various Stainless suppliers.

Industrial's inventory—everything in stainless steels, from sheets and bars through tubing and wire, to valves, fittings and even bolts and nuts—is the largest, most diversified warehouse stock of Stainless in America!

Whatever your specification or fabrication problem, Industrial's highly trained metallurgists will assist you. ***Even today, Industrial works fast, with same-day attention to orders.***

So, in buying stainless steels, save your time and money . . . and free the circuits for servicemen.

Place the entire order with Industrial. If it's Stainless, we have it. Industrial Steels, Inc., 250 Bent Street, Cambridge 41, Mass.

TROwbridge 7000

EVERYTHING IN STAINLESS

INDUSTRIAL STEELS, INC.

Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

The War and Post-War Paper Mill Technologist*

By Walter G. Hendrich[1]

Abstract

Because of the developments resulting from the war, it is necesary for the paper mill technician to consider the changes in manufacturing methods, equipment, and product improvement which must be made to meet the post-war market. He should keep a written record of data on materials, methods, equipment, and products, as well as suggestions and ideas, which otherwise might be forgotten, that will aid in meeting the future.

The author has indicated a mode of procedure by citing his ideas on the changes and possible developments which should be considered by mills producing rag papers. In some detail the various stages in the manufacturing processes from the selection and handling of raw materials to the finished product are discussed.

It is stressed that the technician should become more statistically minded and that he thoroughly analyse the possibilities of new products before proceeding with their development in all details.

At this stage of the progress of the war, it may seem premature to think of post-war plans for the technical man in the paper industry, especially at a time when there are material and manpower shortages, or in other words, when the paper technician is burdened with current problems of getting along with less personnel and material but still must produce the pulp or paper to meet the current requirements. This latter fact all experience daily and it should be looked upon as an asset to the technician instead of a liability. Many "patent medicines" were sold to the papermaker previous to 1942 to patch up deficiencies which in reality were the greatest enemies to the progress of the paper industry. Various occasions have been known where sizing difficulties were overcome by adding a third and fourth material to rosin and alum in order to make the rosin stick. It was more convenient for the superintendent and the chemist to get quick relief in producing a writeable paper than to go into the problem of stock preparation like cooking and beating of fiber to proper receptivity for the rosin.

At the present time it is obligatory to go to basic thinking and often it is found that the pre-war basis, with its abundance of materials and manpower, was not fundamental at all. Now papermakers are really learning to produce a sheet of paper on a much more economical basis. It is the definite duty of the technical man, more so than that of the plant superintendent who is busy with the current production which must be shipped to the needy market, to keep a clear head and present a good picture to the management on materials, methods, equipment, and product, as well as to cooperate with the cost department on standards of products of the pre-war era and the present time. Looking over the fast development of new materials and equipment in this war for other industries, the use of new methods, not to forget the additional products of the paper industry which this war has brought forth, the management of each company should be supplied with a very clear picture of the past and present as well as the numerous plans for the post-war period in regard to these new materials, equipment, methods, and products.

In the third phase for post-war planning it may be hard at times to evaluate the cost involved, but this could be done by using present-day prices to give comparative values to present manufacturing. The paper industry reported about 8% of all manufacturing in the United States and furnished employment to 7.5% of all wage earners, paying out 8% of all factory payrolls. The industry is far from being minor in the United States economic picture and each member of this industry, be it management or technical adviser, has a responsibility for the post-war existence of many United States citizens. There is no doubt that competition within the country will be keen, but still keener will be the competition with paper producers in other countries who have learned before and during this war to produce on a lower cost and earning level than we have. *Business Reports* anticipates for the post-war period a 20% larger output in tonnage for the paper industry than in 1940. This will mean that production in the fine paper industry will be up at least 5 to 10% over last year and printing and wrapping paper will be up from 10 to 20%.

Since all of the author's time has been spent in paper mills which were not self-contained by having a woodpulp mill, it is necessary to talk about a plant using cotton or linen fiber as an example for making a systematic lay-out as to phases to be considered for the post-war period. It is hoped that the first part—rag preparation—will not be too boring for those who

* Presented at the March meeting of the Lake States Section of the Technical Association of the Pulp and Paper Industry, March 14, 1944.
[1] Member TAPPI; Tech. Director, Byron Weston Paper Co., Dalton, Mass. Since Nov. 15, 1944 Hammermill Paper Co., Research, Erie, Pa.

are mainly interested in the use of wood fiber. It is really those who have worked on the great progress made in the sulphite, sulphate, and soda pulp industry who should be giving this talk tonight so the rag paper industry might adopt many of their progressive methods. The economic picture from a labor and equipment standpoint is somewhat pathetic when one thinks of the "grandfather's methods" used. A great number of shortcuts in the method of preparing rag stock should be submitted by every technologist in the rag content mill.

Handling Rags

A bale of rags entering the warehouse now and in the post-war period has to be inspected in a much more efficient manner for its suitability as a paper-making fiber. Progress in the dyeing and finishing of textiles with synthetic fibers entering the field, resin finishes, and more resins to come on the post-war market will make it advisable for the progressive chemist to scrutinize the materials thoroughly and reject the bale before any labor or conversion cost is expended on such materials. Inspection of raw materials with the aid of a portable ultra violet lamp will be of great help. Also, various solvents or test stains have to be developed to check the material for the suitability for cooking in the rag boiler. For the last generation in this field, rags have gone through the routine of thrashing, sorting, cutting, and boiling under conditions of much lower labor costs. In many cases the rags were even hand cut on scythes in front of the sorter. For many grades of rags, thrashing and sorting as well as dusting can be eliminated. A survey of power cost in the conversion of rags definitely shows the advantage of cutting rags more to the size of cotton flock as used in the plastic filler industry. By this it is possible to save power to the extent of 40% in the half-stock beater. Efficient dust collection in the cutter room yields a very uniform fiber which can be used like a linter. Hand feeding to the cutter should be replaced by automatic feeding from the bale.

Rag cooking by past and present methods uses direct steam in a rotary boiler which is cumbersome from a labor standpoint and heat economy. Besides this, an excessive disintegration of the cotton fiber caused by high temperature alkalis in the presence of metal exists in many plants. No textile finisher would think of putting his cloth in contact with the metal of his kier nor would he think of blowing direct steam onto the fabric. Most kiers are equipped with an indirect heating system for the liquor. Here the half-stock mill superintendent and chemist can benefit by the knowledge of the textile finisher and woodpulp producer. It is comparatively easy with the help of a millwright to build small laboratory equipment to make comparative cooks with direct and indirect heat and various cooking chemicals to evaluate the merits of better methods.

Washers

Many may never have seen such universal equipment as a washer in a rag mill which removes noncellulose material, cuts the fiber to suitable lengths for the beater, and also is used as a bleacher. It should make even a high school chemist shudder to think of such goings on in the presence of men with good basic training or long years in paper mills. It is obvious that such equipment, instead of being an asset has become a liability to the economics of the paper business. This much-loved machine, because of its triple duties, has become one of the greatest disintegrators of cellulose fiber. It is not uncommon to see such washers loaded and the rolls set for hard beating in the presence of 1 or 2% chlorine. Here a separation of work to be done has proven very lucrative from a cost and quality angle. Washing of the cooked cotton or linter fiber in the rag boiler is quite common but should be followed by a pre-washing unit or tub by pumping water at a fair pressure from the bottom of the container and removing unwanted material by cylinder washers on the surface. After a good preliminary washing to a color of 10, this rag stock is ready to be pumped to a thickener or direct to the washers for beating and further washing. It would be too lengthy to go into details of washer construction, but many changes for greater efficiency can be made.

The various washer unit loads should be well blended to overcome nonuniformity equal in weight to at least a rag boiler load to a bleacher. This larger unit for bleaching enables the paper mill chemist to supervise more carefully this important phase in the preparation of stock. It reduces the cost of supervision and brings about better uniformity for the conversion of such pulp. It is well to equip the bleacher with a good washing cylinder to remove remaining oxy- and hemicellulose.

Water Removal

The traditional drainer has been surrounded with more mysticism in this century than it was by our forefathers. In those days it was commonly used as a container where the papermaker got rid of water not wanted, or where hard-bleaching rags were loaded with sufficient chlorine to obtain proper whiteness. Aside from the manpower problem in the post-war period and also from a cost standpoint with the large tonnage handled in the average paper mill, better knowledge of rag stripping materials and more cotton bleaching facilities controllable by the paper mill technologist, drainer investment should be a matter of the past. Fiber should be sent through centrifuges or cleaning devices such as vortraps or centrifiners or rifflers and then pumped on to a cylinder machine, wet lap, or fourdrinier. The author is more in favor of a fourdrinier since it enables the operator to grade the stock, inspect for dirt and felting quality, and the stock can be handled in rolls or sheets from wet lap to beater side. It furnishes the paper mill chemist with an opportunity to dye or presize by spraying on the fourdrinier wire, to preconvert fiber for some products, and the bacteriologist to disinfect at higher density.

On this whole phase of rag preparation, it is well to look into the economics of water, which in many mills represents 10% of total power cost as consumed in pumping, adding, and removing water. Counter flow washing of stock in a rag mill is very feasible at the expense of using the present drainers as water storage tanks for waste water from the washers to be used in prewashing after the bleach boiler. So much for methods and equipment.

New Fibers

Regardless of the cost of raw cotton, in the post-war period it may be obligatory to use virgin fiber instead of textile waste. It would also be well to look into the already successful use of flax fiber and hemps. For special products smaller tonnages of ramie, jute and long fiber-producing straws, or other legumes should be investigated. The ability to get

these fibers with improved transportation facilities also should be evaluated for the future.

The technician will have to evaluate closer the yield of raw materials of the various batches to enable the purchasing agent to buy on a more intelligent basis.

In the rag mill, it is well to think of the rag stock preparation as an entirely independent economic unit and to produce a pulp to the beater side on the same basis as a mill expects to receive sulphite and soda pulp to proper specifications. Aside from the common grading as to type of fiber, proper moisture content, beating qualities, slowness or freeness, length of stock, viscosity, brightness, alpha, beta, and gamma cellulose, copper number, chlorides, metal, iron, manganese—some of these factors should accompany each cook depending on the requirements of papermaking.

Beater Room

Now, after having intruded in the holiest of holies to the rag papermaker, the author would like to discuss in a few words the vast field of stock preparation, namely, the beater room where the fiber is further refined or as a frank engineer said, "the hell beaten out of the fiber" in order to form a good-looking sheet with the least effort on the part of the machine tender and let the control tester see how he can get the required specification tests. In late years a great deal of important work has been done at the Institute of Paper Chemistry and other research laboratories as to forming of the paper web with the longest and strongest fiber possible. A certain amount of hydration on fiber is considered necessary to obtain strength characteristics. These characteristics are sought by each paper mill owner in the market to obtain 2200 folds instead of 2000 to enable the sales department to sell his sheet against the competitors.

It appears that in most cases the paper mills are working in the beater room with all kinds of dopes, like starches, glues, guar, or other mucilages, to *regain* some of the strength taken out of the original fiber. Haven't we gone somewhat too far in the expenditure of power in the beater room per ton of paper? With very few exceptions the industry is still working with antiquated beating equipment and in many cases without even an instrument on the beater to show power consumption. It is well for the technical man to lay out thoughts in his mill for the post-war period on which of the above mentioned additions to the fiber will be most economical from a cost, yield, and final product improvement standpoint.

As to methods, it will be well to list the different pieces of equipment as to the time and power required for a given furnish, length of fiber, hydration per time and unit, and chart them against the final physical and chemical test results obtained on the paper off the paper machine. It also is possible that by new coloring and sizing methods, transparentizing and opacifying procedures, the beater room area can become the birthplace of many new products for the future which in the past have been manufactured at a higher cost because of special handling in a converting plant. It is realized that in many cases due to the low densities handled in the beater room such products appear costly because of the loss of material with white water, but the research done during this emergency on precipitation, flocculation, and emulsification should be overcoming a great deal of this by the end of the war.

At this point, the importance of metering water for beater loading, high versus low density beating, not to forget the manpower question—more automatic control and mechanical loading of fiber, solids, and liquids should be mentioned. In larger paper mills where the chemist is fortunate enough to work with a good engineer, many good ideas can be introduced. The development of robots is not recommended, but it is impossible to conceive that the post-war period will have many laborers available who will be willing to handle 2 or 3 tons of material per man shift. The energy spent now and in pre-war days will have to be used for the efficient working of the beater and the progress made on the preparation cycle and on the stock itself.

It will be necessary to have more specifically built beating engines, suitable beater bars and interchangeable bed plates for the various fibers, the different types of fibers will have to be beaten separately, and the mixing or blending of fiber performed in the beater chest. At this time the author, who incidentally is no sales agent for this machine, cannot help putting in a plug for the Bertram beater which in most cases, reduces the power cost in the beater room by 40%.

Today there are chest designs ranging from the old wooden agitator type to high speed bronze agitators and in some mills a pumping medium is used to keep the chest at an equal density. Here it is suggested that the chest can be used for more than just the addition of dyestuffs, namely, batch additions of fillers, sizing material, and ingredients for specialties. This is true especially in mills with the batch system of two chests where the addition of the above mentioned materials can be done more accurately and thus distribute some of the manual activities of the crowded beater room to the chest room.

It is well to look out for improvements made in jordans and other refiners, new types of pumps, density controls, etc. The use of white water for diluting beater stock to chest density is not being used to its fullest extent in many mills for fear of slime development. More use should be made of the bacteriologists' findings in research laboratories.

Paper Machine

In the paper machine area it is found that many mills have paper machines from 10 to 30 years of age. An abundance of improvements have been developed by machine builders in cooperation with paper mills. It would appear that the management is most receptive to improvements for this area; in most cases it is very easy to sell the paper mill owner on ideas for bettering his product and increasing his production on the paper machine. It is well for the technician to present clear statistics as to the performance of the paper after the improvements have been made as well as the economic validity of such action. Take, for example, the old type riffler which was followed by the centrifuge which in turn, was followed by stationary equipment such as the vortrap or centrifiner where the material is kept moving but the equipment itself stationary. It is well to point out to the management the cost of installation, operating cost from a power and manpower standpoint, repair cost, depreciation, effectiveness of the machine on the finished product, in this case dirt count, and waste or shrinkage caused by the operation. Each company should have the above statistics for all major and auxiliary equipment. Current publications give a fund of improvement possibilities for the post-war period and thought should be given as to where better control can be effected by applications like electronics, the

photoelectric cell or other instrumentation which will insure greater uniformity in the production cycle as well as in the quality of the product.

It is well to take into account the suggestions made by the machine crew or any other members of the mill community. To cite a case, an electrician visited a paper mill for the first time and asked what the men were looking for when they discussed formation under the web near the reel. He suggested eliminating 2 or 3 tube rolls under the wire to get an idea of the formation where it could be corrected before the sheet really is formed. A fund of subjects can be built up on this basis if the technician will list such ideas in his statistics for future use. Such procedures bring about a more sincere relationship between laboratory and production, especially if after such installation the individual who brought about this thought is given proper credit. It always has been amazing to the author the enthusiasm and willingness to help in other matters that has been brought about by this principle.

Studies on water removal from the paper machine with the help of weirs or other water measuring means, analyses of the individual water trays as to type of solids, has often given leads for eliminating deficiencies in the product. Studies of stresses on the wet paper web, and texture as well as studies with various felts and roll surfaces, not to forget life of wires and felts, will need a great deal more attention in the future than in the past. It is not enough to install a saveall and be satisfied with the reclamation of fiber, filler, and white water; it is well to study the waste in the saveall, which in some mills really should be called a "save some." There is not the time to go too far into details about possibilities of additions for surfacing the wet web, felt marking for special effects wanted in the surface of the paper, etc. This is more or less an individual problem, but a great deal of attention is paid to this phase by the management since the pride in the product on the market is involved. The paper mill technician is kept on his toes enough without stirring up more trouble in this respect.

Drier Section

Very few paper mill chemists seem to make current tests on the moisture content of the paper web entering the drying section. Only in cases where the production has been increased or when trouble occurs in the driers, are they inclined to look into this matter. It is generally known that the cost of evaporation is a great deal more expensive than removal of water by pressing or other means. The character of the paper or board, however, changes immensely if 70% of water is left in the wet web instead of the 60% or 50% evaporation usually expected. It pays to assemble data on the various grades and weights made in a paper mill and list the moisture contents, back, middle, and front of the machine, in order to give the master mechanic some indication as to the crown and density of his rolls. It is a good idea to take samples daily for a year, preferably without breaking the paper web, in order to get a reliable picture in this respect.

In the drier section it is well to measure condensate occasionally, take pyrometer readings versus internal drier temperature, and this can easily be accomplished by having an inexpensive thermometer tapped into the head of the drier. Ventilation studies on the vapor from the paper and felts bring about gratifying results and help lower power plant cost. Moisture studies in regard to irregular water evaporation within the drier section will lead to thoughts of finishing the paper in a semidry state.

The post-war period will bring about more improvements than ever before conceived. Now the concern is with wire and felt marks, but it is likely that attention will be diverted from these two phases to finishing in the drying section. Machine coating and surface sizing in the drier section have made great headway, but it will be necessary to be alert and, here too, use the new materials this war emergency has brought forth, in order to lessen the cost of finishing by eliminating dry finishing in some cases. It is very possible that drying under vacuum, as done in pulp mills, will bring about improvements from a steam saving standpoint, will enable a manufacturer to make a sheet printable or writeable with new sizing materials. In the equipment field, improvements can be made on many old machines by the installation of nonfriction bearings, new drive arrangements, shake, suction, and press construction of less crude types than are being used now in many mills.

Human inspection of the paper may be a thing of the past in the post-war period considering some of the applications made during the war with electronics and the photocell.

Surface sizing and air drying through the fine paper industry leaves a vast field for the technician to study. In many cases there may be work with higher concentrations and with emulsions. Water may be replaced by easier-evaporating solvents which may or may not be recovered and thus eliminate a step from the constant wetting and re-wetting cycle in paper mills.

Finishing

In the finishing, cutting, sorting, and shipping area it is well for the paper mill brain to visit converting plants for paper, cloth, and even machine assembly lines and there find the thousand and one things where mechanization in this field can be slightly altered and applied to paper manufacturing. One of the author's Canadian paper mill friends recently visited a plane assembly plant in the States and upon his return changed his paper sorting and inspection departments over to an entirely different philosophy from that which his father had applied. Instead of moving paper to sixty employees for sorting, counting, and sealing, he arranged his production line in such a manner that the sorter moved to the skid of paper instead of the skid of paper being moved by a man to the sorting table. He eliminated eight women in this group and found that his inspection has become more efficient and naturally this has brought down his cost. Many who are partial converters of some mill-developed commodity may find that this phase pays greater dividends than the papermaking itself. It is well, especially in the war period, to have at least one or two of such marketable commodities, since freight cost and waste reuse in the paper mill gives fair margin to work on, costs of which in many cases, would make it impractical as a product for an independent company.

New Products

The technician really can do some home studying, as he did in the beginning of this war when he tried to find out "What do our armed forces need, and how can we help?" The war brought about an abrupt change in average American marketing philosophy in which commodities were created and the public was made to want them. Instances are known where ambitious manufacturers created some product which

was nice to have but not necessary to the war effort. Many of these individuals were disappointed, criticized government agencies, but many more investigated the needs and started all over again in their efforts. Because of tax burdens in the post-war period, the author does not believe that the individual will be able to afford to fall for gadgets. When investigating for a company, the sales department in conjunction with the technician should analyze recommendations on the following basis:

1. What will be urgently needed in the reorganization of our life to peace economy?
2. Commodities which are nice to have and make life more pleasant by their existence.
3. Plain luxury items.

It is possible to ramble on about each piece of equipment, methods, materials, products and cost, past, present and future and many interesting phases could be found in each mill, but this would not accomplish the purpose pursued in this paper.

The PAPER TRADE JOURNAL reports that Mr. J. B. Catlin of the Kimberly-Clark Corporation, gave a talk before the American Chemical Society at Lawrence College on "Statistics—A Way of Thinking." It is well for the paper technician to heed thoughts in this direction to bring order to post-war planning.

Statistics and a well-layed-out file or card system will help the technologist greatly to collect thoughts for a post-war plan and not to forget, will help eliminate duplications in effort.

Also evaluate such post-war plan setup from a laboratory viewpoint as to employee and equipment expenditures. Any new idea should yield improvement in quality of product, greater sales dollar value per employee, but not always necessarily greater tonnage.

Discuss Diatomaceous Earths

The regular monthly meeting of the Watertown group of the Empire State Section of the Technical Association of the Pulp and Paper Industry was held at the Brownville Hotel, Brownville, N. Y. Thursday, April 12, 1945. The speaker of the evening was A. B. Leachy of the Dicalite Company whose talk concerned the mining and refining of diatomaceous earth by his company and its use in the paper industry.

Mr. Leachy showed colored slides of the various mines in the West now being worked and indicated how diatomaceous earth or "Dicalite" is refined. There were also slides taken at the main laboratory showing test conducted to insure a uniform product.

Diatomaceous earth is used for pitch control as it disperses the pitch so that it can not agglomerate sufficiently to cause trouble as well as reducing its tack. This property is also utilized in the processing of waste paper, cuttings, etc. containing asphalt. Mr. Leachy indicated that the use of Dicalite produced a freer furnish which improved production or lowers steam costs. Other advantages incurred through its use are improved sheet formation, brightness and opacity, and printability. This material has a decided bulking effect which aids in maintaining caliper.

Dicalite is added to the stock following conventional procedure but if size is used, better results are obtained if the filler is added after the size is fixed. Replacement of other fillers should be done by volume rather than a weight basis because of its lower specific gravity; on a weight basis the addition will amount to approximately 35% of the weight of the filler formerly used.

The use of this material in various grades of paper was taken up by Mr. Leachy. The talk ended with a round table discussion by the members present who were: Wilfred Arsenault, George H. Baker, E. W. Clark, J. Walter Couture, C. B. De Mers, George Duers, G. C. Dutton, W. S. Gamble, Arthur Gault, C. Ives Gehring, R. J. Gilligan, E. A. Godfrey, F. C. Goodwill, R J. Hackett, Walter Harte, Martin Jaffe, David C. Knowlton, A. B. Leachy, J. Lynch, D. C. Mather, W. B. Mills, Clarence Nugent, H. Remington, Chas. J. Slack, H. A. Spencer, Sam. S. Stevens, P. D. Switzer, D. K. Pattillock, H. Taylor, B. H. Treadwell, J. H. Treadwell, W. E. Wanstall, Harold Wheeler, H. R. Wheeler, Fred Yannes.

New TAPPI Members

Garnie R. Cranor, chief chemist, Oregon Pulp and Paper Company, Salem, Ore., a 1930 graduate of Willamette University.

Ashton S. Hamilton, technical assistant to the paper mill superintendent, Hollingsworth & Whitney Company, Winslow, Me., a graduate of Colby College.

Horace R. Hillegas, vice-president of the Franklin Paper Company and also of the Keystone Parchment and Paper Company, 15th and Market, Philadelphia.

Warren S. Kumblad, research and control chemist, Bird & Son, Inc., East Walpole, Mass., a 1928 graduate of Northeastern University.

Andrew McVicker, junior chemist, the Solvay Process Company, Solvay, N. Y. Attended Syracuse University.

Ransom S. Meade, technical service, American Cyanamid and Chemical Company, 3333 Wilkinson Boulevard, Charlotte, N. C., a 1937 graduate of the New York State College of Forestry.

Jack V. Savage, sulphite mill superintendent, Crown Zellerbach Corporation, Camas, Wash.

Ralph E. Westphal, chemical engineer, American Can Company, research department, 11th Avenue and St. Charles Road, Maywood, Ill., a 1941 graduate of the University of Wisconsin.

Technical Sect. To Meet June 18-20

The Technical Section of the Canadian Pulp and Paper Association has changed the dates for its summer meeting from June 12, 13 and 14 to June 18, 19 and 20. The meeting will be held at the Chateau Frontenac, Quebec City, P. Q.

The program will include group discussions planned by the following committees: Alkaline Pulping, Board, Engineering, Fine Papers, Groundwood, Heat and Power, Newsprint, Printability, Waste, Wood Chemistry.

The official dinner will be held on Tuesday evening, June 19 and the guest speaker will be R. M. Fowler, recently appointed president of the Association.

Mill visits are programmed for Wednesday morning, June 20, to the following mills: Anglo-Canadian Pulp and Paper Mills Ltd., Quebec; Building Products Limited, Pont Rouge; Donnacona Paper Company Ltd., Donnacona; Ste. Anne Paper Company Ltd., Beaupre.

To assist in planning the program, particularly the mill visits all those who will be attending are asked to advise the Secretary-Engineer, Technical Section, Canadian Pulp and Paper Association, 3420 University street, Montreal 2, P. Q. It is requested that a preference be shown as to the mill to be visited.

Wartime Picture of the Swedish Pulp and Paper Industry*

By Edwin C. Jahn[1]

Abstract

A general review of the situation of the British, Swedish, and Finnish pulp supply introduces the subject. Great Britain has had to rely on exports from North America to support her economy in contrast to Sweden which has an abundance of papermaking material. Finland's position has been adversely affected by the war.

The author discusses the production and demand for various types of pulp and paper as well as the standard pulping methods. In general the manufacturing techniques and qualities of pulp have been improved.

Because of the war there has been an increased development in the use of byproducts from pulp manufacture and they have become exceedingly important to Swedish economy. This work has been furthered by increased facilities for research.

Timber is the greatest resource of both Sweden and of Finland. In Sweden, forests cover 56.5% of the land area, and in Finland as much as 67.2%. The forests are composed mainly of spruce and pine (80% coniferous in Sweden and 72% in Finland). Birch is the most common hardwood.

Besides the simple existence of these great timber areas in Sweden, their geo-economic position contributes greatly to the prosperity of Swedish forest industries and the high living standards of the country. The greatest timber producing area lies in Norrland. Here the land slopes to the southeast and all the rivers flow in the same direction from the snowy mountainous backbone of Scandinavia into the Gulf of Bothnia. This is most important, for it makes possible very cheap log transport. Since the ice first melts at the river mouths and moves progressively upward with the retreating cold, it is only necessary to transport the logs during the winter to the nearest river or tributary and place them on the ice, from which they are automatically and successively transported to the coast as the ice melts gradually upriver. This would be impossible if the rivers ran in the opposite direction. The mills in Norrland are built near the mouths of the rivers at the coast and have the advantage of direct ocean transport.

Swedish economy as a whole—not only the forest industries—is based upon world trade. The economic isolation which the war has forced upon the country by cutting off the great bulk of her exports and imports has caused Sweden to turn her efforts to a program of self-sufficiency for both military and civil needs. Since wood is her principal raw material, she has endeavored to base as many domestically needed products as possible upon the forests. The pulp and paper industry contributes greatly to the wartime industrial needs of the country.

* Presented at the meeting of the Alkaline Pulping and Byproducts Committees of TAPPI, Savannah, Ga., Oct. 18-20, 1944.

[1] Member TAPPI; Professor, New York State College of Forestry at Syracuse University and Research Collaborator, U. S. Department of Agriculture. Dr. Jahn visited Sweden, Finland, and England during 1943 and 1944 where he studied developments in the pulp and paper industry.

British, Swedish, and Finnish Situation

Great Britain

Before discussing the pulp and paper situation in Sweden, it may be of interest to mention the problems of the British paper industry which are almost of the opposite nature from those of the Swedish mills. In Britain the paper industry, faced with difficult fiber raw material problems, has had to produce paper products essential to the life of the nation and the direct military prosecution of the war. So essential are paper products to the war that the collapse of the paper industry would have lost the war in a comparatively short time.

In normal times the British obtain most of their pulp and other forest products from Scandinavia. The German invasion of Norway cut Britain off from her pulp supply and put the vital paper industry in a critical position. The situation could not be met by importing all the pulp needs from the United States or Canada because shipping tonnage is needed for carrying military material and food. The problem had to be solved mainly at home. The British solved the problem by several drastic steps of which the following are the more important:

1. Conservation of pulp stocks on hand and control of the distribution and use of supplemental pulp imports from North America.
2. Restricted use of paper.
3. Use of salvaged fiber, including blitzed paper and manila in storehouses, old sisal string and manila rope, old jute bagging and old carpets, and household waste paper, for which intensive salvage is carried out.
4. Use of new domestic fiber, including native wood (mostly Scotch pine), wood waste and straw. A straw trading company has been organized to buy straw from the farmers and supply the mills formerly using North African esparto.

The problems of the paper industry were further complicated by the sudden need for the production of new paper products for military purposes. This often meant plant and raw material adaptions for the manufacture of these special papers. The war also greatly increased the demand for certain lines of paper for government use, such as security paper. These problems had to be fitted into the general control of fiber raw materials and paper.

In order to carry out such a program of control, a central organization is necessary. This the government provided, not only for the paper industry, but for all essential and major industries. The paper industry was placed under an agency termed The Paper Control. The Paper Control is made up of men from the industry and who know the industry's problems.

Fiber raw materials belong to The Paper Control which allocates them to the mills as they are needed. The use of the fiber and the manufacture of paper are controlled by a licensing system. Paper may not be delivered by the producer without a license, and in this way a close control is held over the use of

the raw fiber, the quality and type of sheets made, the quantity produced, where it is delivered, and how used.

The Paper Control has the obligation to make regulations which are most suitable to the national interest. In general there is close cooperation between all parties concerned. This system has been the salvation of the industry in Britain and has permitted the mills to keep operating on the limited raw materials available.

SWEDEN

It is a great contrast to leave paper-scarce Britain with its two-sheet newspapers and suddenly drop into Sweden whose storehouses bulge with pulp and where efforts are being made to use as much paper as possible. Paper is taking the place of toweling, serviets, tablecovers, and many other items, because of shortages of textiles and particularly of laundry soaps. Domestic kraft paper and newsprint consumption has also increased.

In normal years the Swedish pulp and timber industries supply world markets. Sweden can consume only a minor fraction of the pulp she produces for her population is only about 6.5 million. Examination of the prewar Swedish pulp markets shows that the average deliveries of chemical pulp including viscose for 1936-39 were divided as follows:

Domestic	3%
Europe, excluding United Kingdom	27%
United Kingdom	18%
United States	42%
Other transatlantic markets	10%

These figures show the grave situation that the Swedish pulp industry was placed in by the German invasion of Norway, April 9, 1940, with the resultant blockade of the Skagerack. Swedish prewar capacity was about 1.5 million metric tons of sulphite and 1 million metric tons of sulphate pulp, not including pulp made for direct conversion to paper.

FINLAND

The Finnish pulp and paper industry has been adversely affected by the war. The industry during the war has been beset by acute labor shortages in the mills and in the woods, high cost of wood, fuel problems, shortage of replacement parts, packing, paint, etc., and, of course, greatly reduced markets. Pulp and paper manufacture is Finland's greatest industry and in 1938 the value of its pulp and paper exports was 41% of the total export value for Finland. In 1938 Finland produced 830,000 metric tons of sulphite and 565,000 metric tons of sulphate. The war, through territorial losses, has resulted in a decrease in capacity from a prewar figure of 1,850,000 down to 1,480,000 metric tons. Pulp mills have been operating at very low capacity during the war; about 25 to 30% during 1943. Kraft paper production, however, was high because of wartime demands for sacks, wrapping, and spin paper.

War Effects on the Swedish Industry

During the war there has been no extension of pulp production capacity in either Sweden or Finland. However, shifts in the types of pulps that can be produced have occurred in Sweden, by the building of new bleaching plants and additions to others. This change was stimulated by the growing viscose demand just prior to the war and during the early war years, and more lately by anticipations for post-war trade.

The principal trends of the pulp and paper industry during the war are: (1) greater emphasis on bleached sulphite and sulphate pulps, (2) production of viscose pulp, (3) manufacture of kraft spin papers, (4) expansion of domestic paper market, and (5) byproduct development. The latter is based on tall oil products, organic chemicals from sulphite alcohol, and cellulose derivatives.

PULP PRODUCTION

The pulp industry, despite the loss of the greater part of its original markets, maintained pulp production at about 50% of its prewar level during 1940-42. This was due to (1) the production of fodder cellulose, (2) the increased export of viscose pulp to continental Europe, particularly Italy and Germany, (3) the improved domestic market for kraft and newsprint, and (4) the demand for kraft spin paper in Europe for making twine and woven sacks. However, during 1943 the picture changed. The emergency requiring fodder cellulose for cattle and horses disappeared, the Italian viscose market was lost, and German purchases gradually declined, e.g., Germany purchased less than half the amount of viscose pulp during the last half of 1943 than she could have under the trade agreement. The decrease in German purchases of viscose, other pulps and paper was probably caused by difficulties in making payment through the barter exchange trade agreements, and to increasing labor and production difficulties in Germany. As a result of these market losses, pulp production during 1943 was around 35% of capacity. During the present year, the export situation continued to deteriorate. Now exports to Germany have virtually ceased and there are only limited shipments by safe-conduct boats. Finnish production in 1943 was only about 25 to 30% of capacity.

Because of the severe climatic conditions during 1940 and 1941 which coincided with the war blockade of Sweden, the Swedish dairy and stock industry was in dire straits. To meet the emergency the pulp industry was called upon to produce a special digestible type of pulp for animals. The Swedish government purchased the entire amount which was about 1 million metric tons. Fodder pulp was made by both the sulphite and sulphate processes using conditions to produce an overcooked soft pulp. The dry pulp sheets were disintegrated. The fluffy pulp was packed in paper sacks, at the same time adding a little molasses and salt. Most of this pulp was made during 1941 and 1942 with only about 130,000 metric tons being made during 1943 to fill uncompleted contracts. The quality requirements of these final amounts were changed so that the pulp can be used for paper, if no emergency arises necessitating its use as fodder. Fodder cellulose is still made in Finland and Norway.

As already mentioned, viscose has been Sweden's main war pulp export. The development of a growing staple fiber (cell wool) industry in Europe, particularly in Italy and Germany, led to increased production of viscose pulp, so that in 1938 over 200,000 metric tons were exported. The peak export year was 1942, with over 300,000 metric tons exported. The capacity for producing viscose pulp, however, kept expanding and now is estimated to be nearly 550,000 metric tons. Production at this capacity has never been realized since many of the extensions made in 1943 were completed after the outlets for viscose had considerably decreased, mainly by the loss of the Italian market.

There is great interest in high alpha pulps and considerable research development is underway to produce special pulps for esters and ethers. There

is a small domestic tonnage for viscose (15,000) and for nitration pulp. Both sulphate and sulphite are being made for nitration.

Paper Production

Since a much larger share of the paper production goes to the domestic market than in the case of pulp, the paper industry has maintained a better position during the war. During 1942 and 1943 it operated at about 60% capacity but has fallen off a few per cent during 1944. In normal times Swedish paper exports are appreciable; in 1937 they were 68% of the production, the latter being 840,000 metric tons, not including board.

The best production is being maintained by the kraft (80%), fine papers (70%), and newsprint mills (60%). The fine papers have mainly a domestic market so have not been particularly affected by the war. There has been considerable domestic increase in use of newsprint and also some safe-conduct shipments of newsprint to Argentina and other neutral countries.

Because of shortages of textiles and laundry soaps, more paper is being used for toweling, serviets, tablecloths, and other uses not previously employing paper. This is part of Sweden's program of self-sufficiency enforced by the war blockade.

Kraft and Spin Papers

The kraft paper mills have been doing moderately well during the war due to the need for sacks for charcoal and wood for motor vehicles, the demand for spin paper, and the requirements of the rearmament program. The charcoal and sack business has been a large one for about 75,000 vehicles operate on solid fuel.

A great deal of strong tough M. G. kraft, having a breaking length of about 12,000 meters, is being made. This is cut into 8 mm. widths and spun into binder-twine for harvesting, ordinary twine, and woven into sacks for potatoes, grain, and seed and into cloth for sugar filter presses, and for furniture and carpet foundation. In Finland, it is also used for vests and heavy curtains. Germany has bought appreciable quantities of this paper, 68,000 metric tons being delivered in 1943.

Standard Pulping Methods

Sulphate

For the usual kraft pulps, the pulping procedure remains essentially unchanged. The cooking cycle is about 6 to 7 hours, with one or two gassing steps before maximum pressure is reached. The time to maximum pressure is 3 to 4 hours, and the time held at this pressure is 0.5 to 1 hour. The maximum temperature is 165 to 170° C. The added liquor is warm, about 55° C., and is heated during the initial circulation up to about 96° C.

Drainage and washing in the diffusers is done in four stages in most cases, only the last going to the river. A new compact diffuser unit with central control and a quick emptying device has been installed in at least one mill.

Circulation and indirect cooking are common digester practise. All mills claim great advantages in capacity per digester, chemical savings, and time savings, by chip packing devices. One mill stated that they get an equivalent of 30 cooks per day after installing chip packers as against a previous 24.

Salt cake consumption is low, the average figure given being about 200 pounds per ton of pulp. Some mills claim figures much less than this.

The Jönsson vibration screens are coming into quite wide use in both sulphite and sulphate mills for the initial screening stage. These have a very high capacity—one 50,000-ton mill has two screens. Some mills bleaching kraft also use some type of fiber fractionator for special pulps.

Sulphite

The low capacity of operation during the war has resulted in a slower tempo in sulphite pulping. The cooking cycle, drainage, and washing times have been increased. Plenty of time is allowed for drainage in order to get the maximum recovery of waste liquor for alcohol fermentation.

The wood generally comes to the mill in 3-meter lengths and is piled and stored 8 to 12 months. Great care and selection are exercised in the barking and cleaning of the wood. Wood from the barker (usually a drum barker) is inspected on a conveyor and rejects, may go to a second conveyor. Rejects from the latter may be hand-cleaned by knife barkers, electric shavers, etc. In some mills, bolts of second quality are chipped separately and the chips cooked separately from the prime quality wood.

An apparatus has been developed by N. Kanto of Finland for fractionating chips into prime and second qualities. This is based on the principle that the heavier and chunky-shaped knots fall faster from an inclined plane than well-formed chips which have greater air resistance. This principle makes it possible to separate the chips into two grades by dividing a wide falling stream of chips with a long steel wedge. A Swedish mill has this device in operation for about two years and there are two installations in Finland.

Pyrites is the principal source of sulphur for making acid. A fine pyrite dust having 50 to 52% sulphur is obtained by the floatation of pyrite ores. In most cases the gas passes both through a water scrubber to remove sulphur trioxide and Cottrall precipitators to remove dust composed of iron oxide, arsenic, and selenium compounds. About 90% of the sulphur is recovered as sulphur dioxide.

The acid from the towers is taken to a low pressure tank and then to a high pressure tank. Here the acid is brought up to strength and its temperature raised by the digester relief gases, with the excess gases going to the low pressure tank. The acid is brought to the digester at 60 to 80° C. and has 5.5 to 6.0% total sulphur dioxide.

The cooking conditions vary greatly according to the type and quality of pulp produced. The great majority of mills have digesters equipped with a circulation system. The heating may be either direct or indirect. Generally speaking, the cooking temperatures for unbleached and strong sulphites are 125 to 135° C. and for viscose pulps, 142 to 145° C., and the cooking period 14 to 16 hours and 11 to 14 hours, respectively. For bleached pulps, the cooking is closely integrated with the bleaching operation to produce the desired quality.

Bleaching Methods

New developments in the production of bleached sulphite and sulphate have taken place. The bleached sulphite developments were in response to the viscose market demand in Germany and Italy starting before the war. Bleached sulphate capacity is about 2.5 times the prewar capacity, which was not large (about 130,000 metric tons). Two large kraft mills are now installing bleach plants. The sulphate bleach extensions are being made with an eye to post-war markets. With these markets in mind, much thought

is being given higher pulp qualities and special pulps. This has led to *versatility* of production—of ability to make the pulps demanded, whether bleached or unbleached. The bleach plants are designed to this end and are very flexible.

There is no standard construction of bleach plant and no standard practise. Each mill has its own innovations in plant equipment design and in technology. The operation is multistage and most plants combine towers and Bellmer-type bleachers in various arrangements. For ordinary sulphite viscose (*ca* 89% alpha), the operation consists of treatments with chlorine, alkali, and calcium hypochlorite in three to five stages. Chlorine and alkali consumption average 15 to 20 kg. and 10 to 15 kg. respectively, per ton of pulp. For special high alpha pulps, the material is given additional alkaline treatments after the bleaching operation and may be given a final bleach with chlorine dioxide. The purpose is not necessarily the highest possible alpha content, but high clarity and filterability of the cellulose in solution.

Various bleaching combinations are used for kraft pulp, employing chlorine, alkali, and hypochlorite. A five-stage process is common, but it varies from four to seven. There are two different schools of thought on kraft bleaching. One prefers to begin with an oxidative bleach, i.e., hypochlorite, and the other prefers a heavy chlorination at the start. The final stage is hypochlorite, if not followed by chlorine dioxide.

There is interest in chlorine dioxide as the last bleaching stage for bleached sulphite and particularly kraft. It appears to remove the last traces of lignin rather well, causes less yield loss to get the same quality, saving some alpha, and decreases the amount of alkali and hypochlorite required.

Some mills screen or otherwise fractionate viscose and dissolving pulps with special equipment to eliminate ray and epithelial cells and fines. The resin content of the pulp is very considerably reduced by eliminating the fine material.

Other Technical Developments

It is not possible in this short time to give more than the brief description already given of a few of the developments in pulping. Among others the following are of interest: waste liquor evaporation, continuous semichemical pulping in combination with Asplund defibrators; continuous kraft cooking, use of soda base liquor by one mill, pilot plant experiments in cracking alkaline waste liquors to produce liquid organic compounds, and a simplified method of water purification.

Precooking with dilute sulphuric acid before sulphate digestion has been claimed advantageous in Germany for producing high alpha krafts with less degradation and less consumption of chemicals. The advantages are not so great for sulphite.

New developments have been made in the evaporation of both sulphite and sulphate waste liquors. Several systems are in operation for evaporation of sulphite liquor and the gaining of the calorific value of the organic matter and eliminating the disposal problem. One is based on multiple-effect evaporation, another on the combination of multiple-effect evaporation and stack gases, and a third uses the Ramén stack gas system.

There are three systems for evaporating sulphate waste liquor; one using stack gases (Ramén) and expansion vessels, another using stack gases over rotary disks (Nyquist), and the other using superheated steam (Bergstrom-Trobeck). One mill combines the evaporation of sulphite and sulphate liquor. The mills having these systems in operation make good claims for them as to efficiency, costs, heat return, and chemical recovery.

Swedish pulp and paper mills are under very close technical control. Material balances, chemical recovery, and heat conservation are very carefully watched. Heat exchangers are liberally used and occur at every conceivable point where a few calories may be wrung out. Technical standards are high for the mills are under technical management.

Tall Oil

The byproducts of the sulphate pulp industry are sent to one of three plants for refining. The total capacity is about 15,000 to 17,000 metric tons of raw tall oil. Each plant uses a different system for refining but the main products are the same, namely, rosin, pitch, soft and hard soap, and fuel oil. There are also produced insulating cable oil, sulphonated oil for the textile industry, and other products.

Tall oil is particularly important now during the war for it supplies essential industries, such as the soap and paper industries. A high grade rosin size is made and it is expected that the paper industry will continue to use this product after the war. At least 80% of the nation's soap is made from tall oil. It is also used in making shoe and stove polishes, in the rubber and leather industries, as a plasticizer in plastics, in the making of lacquer resins, for producing consistency fat, as a mixing oil, as a diluting agent in red ochre, and as a softening agent in cellulose lacquers. In Finland, it is the only paint oil available and is strictly on priority.

Active research is being pursued on the elimination of tall oil odor, on hydrogenation for high grade soaps, on the preparation of drying oils, and on sharper methods of separating the rosin and nonsaponifiable contents.

Cellulose Derivatives and Sulphite Byproducts

Some of the pulp companies are greatly interested in cellulose derivatives. There is a small production of celulose glycollate ether and of ethyl ethers. The glycollate ether is water soluble and used for adhesives, particularly for wallpaper, for textile sizing, and to give body to various types of food. Water and alcohol soluble ethyl ethers are made.

Besides viscose pulp, nitration pulp is manufactured by both the sulphate and sulphite processes. A small staple fiber industry has started in Sweden and there are two plants with a combined capacity of about 12,000 tons. The cellulose derivative development is aimed only for the domestic market.

The demand for chemical products formerly imported has led to an active development of byproducts. One of the most impressive of these is the building up of an organic chemical industry based on sulphite alcohol. Thirty-three sulphite mills now have alcohol plants, and the total annual capacity is about 120 million liters of 95% alcohol. Unfortunately, because of the low activity of the sulphite industry, the production is much less than this figure. Some of this alcohol goes to distilleries for drinking spirits, some is used for motor fuel, but a large amount is the base for organic industrials, such as glycol and its derivatives, butanol, crotonaldehyde, ethyl and butylacetates, chloracetal, etc. This chemical development is a part of the pulp industry.

Pulp Stocks and Wood Supply

The Swedish pulp and paper industry is ready to resume world trade as soon as the Nazi war ends. The pulp industry has its storage capacity filled. The estimated chemical pulp on hand early last summer was about 550,000 metric tons, and now it is estimated nearing 700,000 metric tons, by storage on boats.

The wood situation is still good. Last spring it was estimated that there was enough timber on hand at the mills, or cut and on the way to the mills, to supply both the lumber and pulp industries for one year's operation at full capacity. During the war the consumption of wood for fuel has greatly increased. The increased cut of fuelwood has been counterbalanced by the greatly reduced amounts cut for the pulp and lumber industries so that the total annual cut of timber has remained about normal, e.g., the amount cut in 1943 was 53 million cubic meters and, in 1937, 53.6 million cubic meters. Furthermore, in so far as possible, the fuelwood is cut from defective and poor quality trees.

Technical and fundamental research have received great impetus during the war. At first the incentive was mainly to meet Swedish wartime needs for many items formerly imported. Gradually, however, the emphasis shifted to post-war preparations, particularly quality improvements and the development of new products, both pulp and chemical, from cellulose, lignin, and wood.

A number of companies have built large modern laboratories, and others are under construction. Also, a large wood research institute is being built in Stockholm. This is financially supported by the pulp and paper industry, the wallboard industry, plywood manufacturers, the wood exporters association, and the Swedish government. This intensive research activity is part of the program to keep and improve the Swedish pulp and paper industry's position in post-war world markets.

Some Technical Aspects Regarding the Future of Paper Products*

By R. G. Macdonald[1]

Abstract

Considerable developmental work was required to adapt prewar paper and paperboard products and to produce the new ones demanded for the prosecution of the war. The problems and the steps taken for this evolution are outlined.

Consideration is given to the raw materials which will be available to paper manufacturers for post-war markets, many of which have been created since the advent of the war.

For the past two months there has been a steady flow of visitors from Europe to this country, representatives of industrial firms who have heard that we have made tremendous technical progress and are here to investigate them at first hand. In discussing many things with these men, it becomes quite a revelation to note how much progress has been made in the face of great operating handicaps and materials shortages.

One of our most important exports in the days to come will be American know-how. Expert engineers and technical men whose services are already sorely needed in many countries of the world will be excellent missionaries for our products and processes. The know-how has been developed under the exigencies of our wartime economy.

We all know how one material shortage followed another until paper was the only material left. Then, paper joined the shortage society and other materials such as steel had to replace it for some uses.

Wartime Packaging

Although the armed services found uses for nearly all kinds of papers, it was in the field of packaging that the industry rendered its most spectacular service. Early in the war the Marine Corps found that it had to abandon its famous "Old Faithful" wood packing box and use a paperboard container. The Quartermaster and Ordnance had to find substitutes for its tin cans. In almost every sphere paper became the answer.

When the Army and the Navy indicated its minimum specifications that had to be met by this paper substitute, it was realized that no sheet of paper or board could do the job. Something had to be added.

That something was paper plus coatings, adhesives, and impregnants. The story of the V-box is known now to all of you. Its development is the story of the cooperation of the weatherproof board industry — a combination of know-how which added up to an answer to the heavy container problem. It developed a new breed of technical and operating men called packaging engineers. It spurred organizations like the Technical Association to buckle down and bring together all aspects of knowledge of materials and to quickly develop adequate means of evaluating the requisite properties of packaging materials.

Not only were heavy containers needed that could meet rough handling, water, humidity, insect infestation, and other specifications, but everything that went into these containers had to be wrapped separately. Even the small composite parts of the Ration-K had to be properly clothed. New food products were developed such as quick frozen and dehydrated foods. Metal parts had to be protected against corrosion. These required wraps that would keep moist air and gases away from the products themselves. Here again paper had to do the job that could have been done by many synthetic films and tinplate if these things were available. They were not available so the paper industry became better acquainted with water vapor permeability and grease resistance. I can assure you that hundreds of man-hours were devoted in this industry to these properties alone.

The job was well done and recently a committee of the Technical Association met in New York to

* An address given before the conference sponsored by the Agricultural Cellulose Residues Committee of the Technical Association of the Pulp and Paper Industry at the Northern Regional Research Laboratory, Peoria, Ill., April 25, 1945.

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mop up the relatively few remaining problems — these being mainly the lists of tests that the Army and Navy wished to have standardized so that every arsenal and quartermaster depot would mean the same thing when they drew up specifications.

The Technical Association rose to its most spectacular height in aiding the war effort when it met at Chicago in 1943. The contrast between our knowledge of packaging as exhibited at our Boston meeting in 1942, and the Chicago meeting, was something to behold. In the fall of 1942 the Quartermaster stated his packaging problem for our benefit. The Chicago QMC Depot was just beginning to develop an organization fortified with full time civilian assistance and citizen soldiers with a technical background to cope with its packaging problems. By the fall of 1943 most of those involved had a fairly good idea of where they were going and our big job at Chicago was to see that everyone was adequately "briefed" as they say in the Air Forces for his job. A 20,000 square foot exhibit manned by the packaging officers and experts of the Services demonstrated the products themselves and to this was brought, at the request of the Army and Navy, nearly 3000 packaging contractors from all over the Middle West. These, in addition to the 1200 paper men of TAPPI, were made fully acquainted with the necessary know-how of packaging and were then better able to be "Can-do" men like the Seabees.

In this connection we should not fail to mention the fine essential work of the Forest Products Laboratory at Madison, and the Institute of Paper Chemistry at Appleton. Madison has been the training and clearing house on practical packaging. A steady procession of packaging contractors such as those who attended the TAPPI Chicago meeting went to Madison and devoted a week each to intensive instruction in packaging techniques and technology. An instruction program originally planned for three weeks duration was condensed to five days through the efficiency and skill of the special teaching organization set up for the purpose. Appleton's contribution has been necessarily of a secretive nature, having to do with difficult product development subjects. Some day this story will probably be told in full.

Product Development

Those of you who have read the TAPPI Bulletins have had a play by play report on the progress of packaging and container development. For those of us who have watched it closely, it has been an orderly unfolding of a dramatic story. In reporting this progress to visitors to our shores it is difficult to believe that so much technical progress could be made in such a relatively short time. At our Boston meeting, even before things really began to happen, J. D. Malcolmson stated that more progress in paperboard development had been made in the two preceding years than in the twenty preceding them.

Needless to say, paper, in itself, did not become a superior product. In fact, the difficulties met in the industry itself relative to machinery, manpower, and materials were hurdles to be overcome but the problem was a catalyzer of all kinds of industrial effort.

The enemy made the word "ersatz" common and in this country we raised the prestige of the word synthetics to a high level of respectability. Plastics became the umbrella-word that described almost everything that when added to paper made it the wartime miracle product. Phenols, ureas, melamines, vinyls, etc., became tricky two dollar words to throw around. Stick kraft and glassine and foil and cellophane together with synthetic cold set and heat sealing resins and you had a product that could give the tin can and the glass bottle a run for their money. Impregnate paper with varieties of asphalt and you had a bag that did not care how wet it became. Impregnate it with certain resins and you had a sheet on which you could put a war map that would not fall apart in the rain or a damp fox hole.

You have read of the hundreds of uses to which paper has been put during the war. I have dwelt on the main feature of packaging because this constituted the main accomplishment. In doing so you will note that I have stressed the fact that paper contributed certain necessary construction properties but the adhesives, coatings, and impregnants contributed the properties not inherent to paper.

What about the future prospects of these developments and the paper and pulp industry in general? Perhaps it is too early to speculate. We got off to a false start along this line in TAPPI this winter. Late last fall some of our dormant committees began to come out of their hibernation and after a few stretches decided that it was time to take account of stock, and see where we are heading. One of our best annual meeting programs was developed and was ready for enthusiastic presentation, when in January, came the cease and desist order on organization conventions. Part of this program was salvaged in the form of papers that are being published, but some of the most interesting items have had to be postponed until a more opportune date.

This transfer of interest in the post-war has, however, been reflected in our most recent TAPPI Bulletins. We have been giving attention to the "whither are we drifting" phase of speculation. This has led to considerable introspection.

Post-War Pulps and Papers

Our first Bulletin of April is in this category. First consideration should, of course, be given to our inventory. If we are going to have a paper industry we need to know from where the raw materials are coming. We are meeting at this time to consider one type of raw material in particular. Another major type is wood. The Scandinavians have a fairly definite idea of its forest resources and have wisely adopted a policy of using only the annual increment in normal times. In this way its major raw material should last forever.

In this country we are still rather hazy on this point, but we do know that even we have raw materials limitations. If you were planning to build a new pulp mill, as an acquaintance of mine is doing, you would need to check up and find out where you are going to get a reliable pulpwood supply. You would not find this to be an easy task. You would find that most of the good stands are quite well accounted for and obtaining one stand that would supply adequate pulpwood for years to come for an economically located mill would be a problem. You would probably find that such a stand would not be conveniently near a sea coast location. There are still a few good inland possibilities, but then you would have to balance up the factors of proper water supply, transportation, markets, chemicals, labor, etc. This is certainly no job for an amateur.

If you were going to start a board mill, would your raw material problems be a simple one? Is there

enough waste paper for everyone? Perhaps you may say that there is, and it will be better than it ever has been, since there will be so much waste virgin liner board and kraft wrapping paper available. This may be so, but how much waste paper are the big city stores going to burn in the future and how much of this paper will contain those things that have been added to give new properties?

The high grade bond and writing paper people have depended for years on waste cotton rags. The textile finishers now tell them that post-war rags will have waterproof finishes and other finishes contributed by synthetic resins, many of which cannot be divorced from the cotton content by any simple, economic means. What may this mean in the future? If cotton must be used for certain grades, perhaps it will have to come direct from the cotton field by way of a commercial half-stuff manufacturer or a cotton broker. One mill now prepares half-stuff of designated specifications for a large papermaker who converts it into paper and ships it to a fabricator who impregnants it with resins for ultimate use. This has been the procedure relative to the manufacture of the bazooka tubes.

If the paper is to used for printing purposes, how is it to be made after the war? Studies of printing properties have emphasized the desirability of smooth paper surfaces and acceptable color. Before the war wonderful printing papers were being used, having high brightness and opacity. Much of this color was contributed by white pigments. Why not just smear pigments on the paper surface and level off the microscopical hills and valleys? This is now being done and we hear of many new ventures in paper coating, not by the excellent old methods which will continue to be used for a long time to come, but on the paper machines themselves at high speed. Now having decided to cover up the fibers with carbonates, clays, and oxides, why use chemical base stocks if certain kinds of groundwoods will be adequate for the purpose? In fact, why use wood pulp at all if any other sheet has the requisite technical specifications?

If groundwood is to be used in ever increasing amounts, what are you going to grind? Although we do not accurately know our pulpwood resources, we do know that certain very desirable woods are difficult and uneconomic to get. If there was plenty of spruce available everywhere, everyone would probably be very happy. In recent years the firs and Eastern hemlocks have joined the hard to get species. Now we are beginning to talk glibly about jack pine and hardwoods. They are being cooked by every process and money and effort is being expended to learn how to grind them.

New Uses for Pulps

In between the chemical pulps and groundwoods are the semichemical or high-yield pulps that are finding niches for themselves in use. The first of these was the well-known spent chestnut semichemical pulp used in corrugating. Some of the new hardwood mechanical pulps are almost in the semichemical class, some acid, some alkaline in pretreatment procedure. During the war a few mills have learned how to bleach groundwoods with peroxide and thereby enable them to attain a brightness satisfactory for admission to cultural society. Another mechanical-chemical process is being used even in the industrial hearts of big cities. One unit of equipment is chipping round logs, grinding the chips, and subjecting them to chemical refinement and turning out a product that is not groundwood or chemical or even semi-chemical pulp in the old interpretation of the terms.

Market for Paper Products

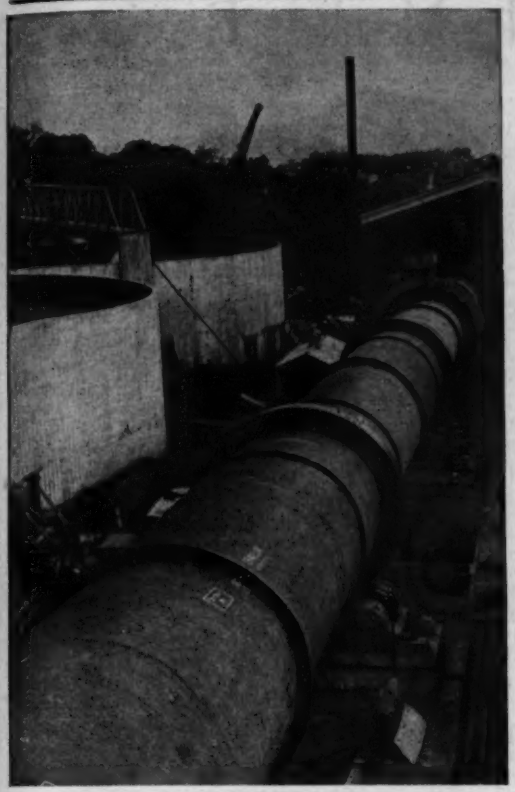
To the Scandinavians and other Europeans, and to pulp producers generally, all this means that their field of profitable activity eventually lies in the production of pulp that will give them the highest return on their pulpwood dollar. That means that they hope to produce a pulp that will have an end use in a product that represents a high premium value such as is obtainable from bleached and dissolving pulps.

As you can see from this brief mention of the changing pattern in pulp and paper production, there are major problems to be considered concerning raw materials and processes. When we look ahead in the converting fields we find the possibility of a great unsatisfactory market for all kinds of products. Even in the United States with its 300 pounds per capita consumption we see new paper uses by the hundreds. While paper is a substitute for many things, there is no real substitute for paper at its present price. It is true that when things are added to paper, the price of the new material approaches that of other materials, and then real competition begins. Foils, plastics, rubbers, metals, glass, and other materials have their attributes, and quality and price will probably always be the deciding factors, but new uses alone is bound to strain our economy insofar as paper and paperboard are concerned.

The daily introduction into foreign lands of American-made goods through 9000 post exchange Army stores and our lend-lease program constitutes a sampling of American goods on a scale undreamed of in peace times. Protective papers should increase an export market for materials otherwise subject to corrosion. Quick frozen foods must be packed in water vapor resistant barriers. From 1930 to 1945 this industry has advanced from 80,000 pounds to 500 million pounds. The dehydrated food industry has considerable possibility now that we know how they should be prepared and protected in transportation and storage. Air transportation of materials will not put the railroads out of business, but new products will move around the world because the hazard of perishability will be met by the time factor offered by air transport. The superfood and self-service markets are definitely on the horizon as public services and will require the protection and convenience provided by hygienic wrappers such as paper and transparent films, many of which will be made from pulpwood. The new spiral and convolute small containers and large drums will be needed in many packing fields and even the individual pill and vitamin capsule must now be packaged individually in some heat sealed, preferably transparent package.

New Converted Products

The French say, in translation, "The more things change, the more they are the same thing." As for paper there will continue to be newsprint, wrappings, printings, writings, tissues, paperboard of all kinds, glassines, etc., but they will be new products when they are coated, laminated, and impregnated as many of them will in the future. They will utilize new raw materials in their fabrication and compete in many fields with other materials. If they serve their purpose better than anything else, in every respect, and at a lower cost, they will prevail against all competitors.



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ALLENTOWN, PENNA., U. S. A.

New York Paper and Pulp Market Review

Closer Control Over Distribution of Newsprint Is Indicated In Amended General Conservation Order M-241 — Paper and Wood Pulp Supplies Are Below Requirements — Waste Paper Is Active.

Office of the PAPER TRADE JOURNAL,
Wednesday, April 25, 1945.

The gradual curtailment of many types of paper for civilian use during the over-all shortage, is indicated in the tighter control and regulation of the distribution of newsprint announced last week by the WPB. If the war in Europe should terminate before expectations and exports of Swedish pulp resumed, the paper and wood pulp supply situation would, of course, be greatly improved. The best forecast at this date seems to indicate little relief in the current shortages; supplies may become more acute in the future, with not much improvement until well into the last quarter of this year.

The index of general business activity for the week ended April 14 rose to 142.3, from 139.8 for the previous week, compared with 141.6 for the corresponding week in 1944. The index of paperboard production was 157.7, compared with 145.4 for the previous week, and with 142.8 for the corresponding week in 1944.

Paper production for the week ended April 14 was estimated at 87.4%, compared with 84.7% for 1944, with 89.3% for 1943, with 100.8% for 1942, and with 94.0% for the corresponding week in 1941.

Paperboard production for the week ended April 14 was 93.0%, compared with 92.0% for 1944, with 96.0% for 1943, with 94.0% for 1942, and with 78.0% for the corresponding week in 1941.

Paper supply in the current second quarter is estimated by the WPB at 1,951,000 tons, compared with an average quarterly output of 2,055,000 tons in 1944, 2,340,000 tons in 1941, and with 2,009,000 tons in 1940. Paperboard supply in the second quarter totals 2,420,000 tons, compared with an average quarterly supply of 2,241,000 tons in 1944, with 2,100,000 tons in 1941, and 1,612,000 tons in 1941. Supplies of paper (excluding paperboard) will be the lowest since 1940, while paperboard production should rise to a new high level in the second 1945 quarter.

Wood Pulp

Wood pulp supply closely approaches the highest levels in history. The WPB estimate indicates 2,855,000 tons available in the second quarter, compared with an average quarterly supply of 2,784,000 tons in 1944, with 2,884,000 tons in 1941, and with 2,546,000 tons in 1940. Wood pulp exports in the second quarter are about 50% of the 1940 level and about 75% of the 1941 level, but a little higher than in 1944.

Rags

Demand for most grades of cotton cuttings is reported active this week. Mill buying steadily absorbs about all the available papermaking grades. Prices are firm at ceiling levels.

Old cotton rags are in steady demand, as buying by roofing mills continues active at this date. Old white and blues are in active demand. Ceiling prices prevail.

Old Rope and Bagging

No important change in the old rope market has been reported this week. Demand for Manila rope continues to absorb all supplies for essential war and defense needs. Prices are firm at ceilings. Trading in scrap bagging is reported limited in tonnage at this date. Reports from some quarters indicate the tone of this market is somewhat improved, though buying is characterized as cautious. Prices are slightly firmer and continue nominal.

Old Waste Paper

Mill demand for waste paper is active this week. Prices are strong at ceiling levels. WPB reports that consumption of waste paper by book paper mills represented 5.5% of 1,688,088 tons of paper stock consumed in the last quarter of 1944.

Twine

No important change in the twine market has been reported this week. Demand is good for the best available grades of twine. Jute is reported in good supply and is more widely replacing cotton, particularly in the larger sizes of twine and cordage. Prices are firm and unchanged.

E. D. Jones & Sons President Resigns

The E. D. Jones & Sons Company of Pittsfield, Mass. announces with regret that Stanley P. Benton who has been connected with the company since 1918, and who for the past 17 years has been its president, resigned from that office April 16. e will continue in service as chairman of the board of directors. Mr. Benton is succeeded as president by S. Harley Jones, grandson of the company's founder, and who has since 1938 been vice-president, having served in other capacities with the company for 16 years.

The other officers of the corporation remaining unchanged are: H. H. Williams, vice-president in charge of sales; D. E. Jones, vice-president in charge of manufacturing and engineering; E. E. Dawson, Jr., treasurer; Miss Elizabeth Hill, assistant treasurer; J. I. Donna, secretary.

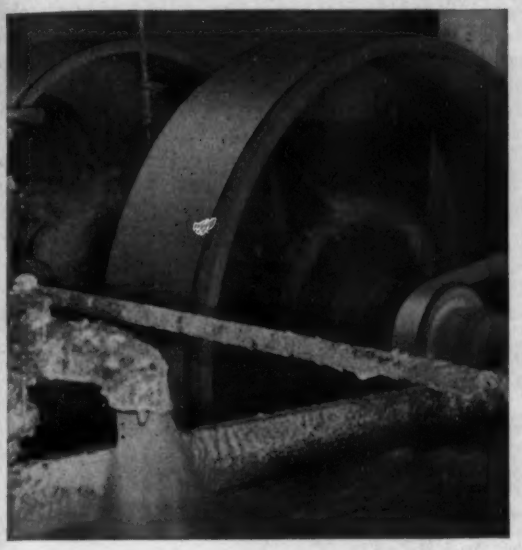
The Jones Company, now over 100 years old, manufactures high grade machinery for paper mills, dealing especially with pulp preparation equipment such as beaters, jordans, screens, special refining equipment, pulpers, etc.

Now Lt. George R. Boschen

George Boschen, who resigned as assistant to Thomas J. Burke, secretary treasurer of the Sulphite Paper Manufacturers Association, Inc. to go into the Army as a private has recently received his commission as a Lieutenant, according to advices recently received by Mr. Burke from Germany.

Lt. Boschen wishes to be remembered to his many friends in the paper industry.

TANNATE WATERSHED



...the belt to install where dampness is a factor

In paper and pulp mills, where hot, humid conditions are encountered, Tannate Leather Belting maintains a high operating efficiency . . . carries nearly a full load even when damp. Laps and plies won't separate. These advantages result because Tannate is made with waterproof cement and is treated to resist moisture.

Further it is resistant to machine oils and many weak chemicals. It is strong and flexible and has an exceptional pulley grip.

Rhoads Engineering Service has helped many mills with their difficult drives. Let us help you.

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A user of Tannate Belting reports a 33 1/3% increase in output, longer life of the belt and a considerably lower chipping cost.

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Foremost in the March of Progress....

FOR INCREASING PRODUCTION OF GOOD PAPER

APPLETON WOOLEN MILLS
APPLETON · WISCONSIN

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, April 25, 1945.

BLANC FIXE—Prices on blanc fixe continue to conform to prevailing levels. Demand is reported fair. The pulp is quoted at $40 per ton, in barrels, at works. The powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—All-over demand continues heavy. Production reported heavy. Allocation removed on February 27. Quotations are unchanged. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in drums, car lots, f.o.b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound f.o.b. shipping point.

CAUSTIC SODA—Demand very heavy. Production large, but under demand. Market continues tight. February output lower at 88,216 tons liquid and 18,120 tons solid. Shipments delayed by traffic congestion. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices in drums, car lots, f.o.b. works.

CHINA CLAY—Current demand is reported moderate on many grades of china clay. Quotations unchanged. Domestic filler clay is quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Military and all essential requirements heavy. Car shortage hampers deliveries. Chlorine is currently quoted at $1.75 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—The rosin market reports no offerings or quotations. OPA price on "G" gum rosin is $5.79 per 100 pounds, in barrels, at Savannah. "FF" rosin is established quoted at $5.75 per 100 pounds, in barrels at New York. Average price on seventy per cent gum rosin size is $5.95 per 100 pounds, f.o.b. works.

SALT CAKE—Prices on salt cake continue to be reported unchanged. Domestic salt cake is currently quoted at $15 per ton, in bulk. Chrome cake is currently quoted at $16 per ton. All quoted prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand for soda ash is reported to absorb current production. Market is tight. February output lower at 171,929 tons. Prices continue to conform to prevailing levels. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Corn market less firm. Offerings larger at this date. Car shortage still delay shipments. Demand continues heavy. Prices unchanged on starch. Pearl is quoted at $3.72 per 100 pounds. Powdered starch is quoted at $3.83 per 100 pounds. All prices in bags, car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA—Demand good. Supply situation is favorable. Prices of the commercial grades are currently quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $1.85 per 100 pounds. All prices in bags, car lots, f.o.b. works.

SULPHUR—Current consumption of sulphur continues heavy. Market situation unchanged. The quotation on annual contracts continues at $16 per long ton, f.o.b. mines. The current price on contracts at Gulf Ports is $17.50 per long ton.

TALC—Demand reported good. Domestic grades are currently quoted at from $16 to $21 per ton at mines. Canadian at $24 per ton. All prices in car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	*$61.00	@	—
Sheets	69.00	@	—
* OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—
* OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00
Boards, per ton—			
News	*50.00	@	—
Chip	*50.00	"	—
Sgl. Mla. Ll. Chip	*62.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10	@ $46.00	$40.25	@ $47.25
100% Rag	32.20	" 37.75	33.35	" 39.25
85% Rag	....	"	29.90	" 35.00
75% Rag	23.00	" 27.00	24.15	" 28.25
65% Rag	....	"	22.80	" 27.75
50% Rag	18.70	" 22.75	19.90	" 24.25
25% Rag	16.40	" 20.00	17.55	" 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$10.55	@ $12.75	$11.70	@ $14.25
No. 2	9.65	" 11.75	10.80	" 13.25
No. 3	9.20	" 11.25	10.35	" 12.50
No. 4	8.90	" 10.75	10.05	" 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@	$15.9
No. 2 Glossy Coated	12.40	"	14.0
No. 3 Glossy Coated	11.60	"	13.2
No. 4 Glossy Coated	11.15	"	12.7
No. 1 Antique (watermarked)	10.25	"	11.7
No. 2 Offset	9.60	"	11.0
A Grade E. F.	9.35	"	10.7
A Grade S. & S. C.	9.60	"	11.0
B Grade E. F.	8.85	"	10.2
B Grade S. C.	9.10	"	10.5
C Grade E. F.	8.55	"	9.7
C Grade S. C.	8.80	"	10.0
D Grade E. F.	8.25	"	9.3
D Grade S. & S. C.	8.50	"	9.7

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$86.00
Unbl. Softwood Sulphite	74.00
Bl. Hardwood Sulphite	83.00
Unbl. Hardwood Sulphite	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich	72.00 @ 82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	76.00
Unbl. Soda	73.00
Groundwood	58.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices

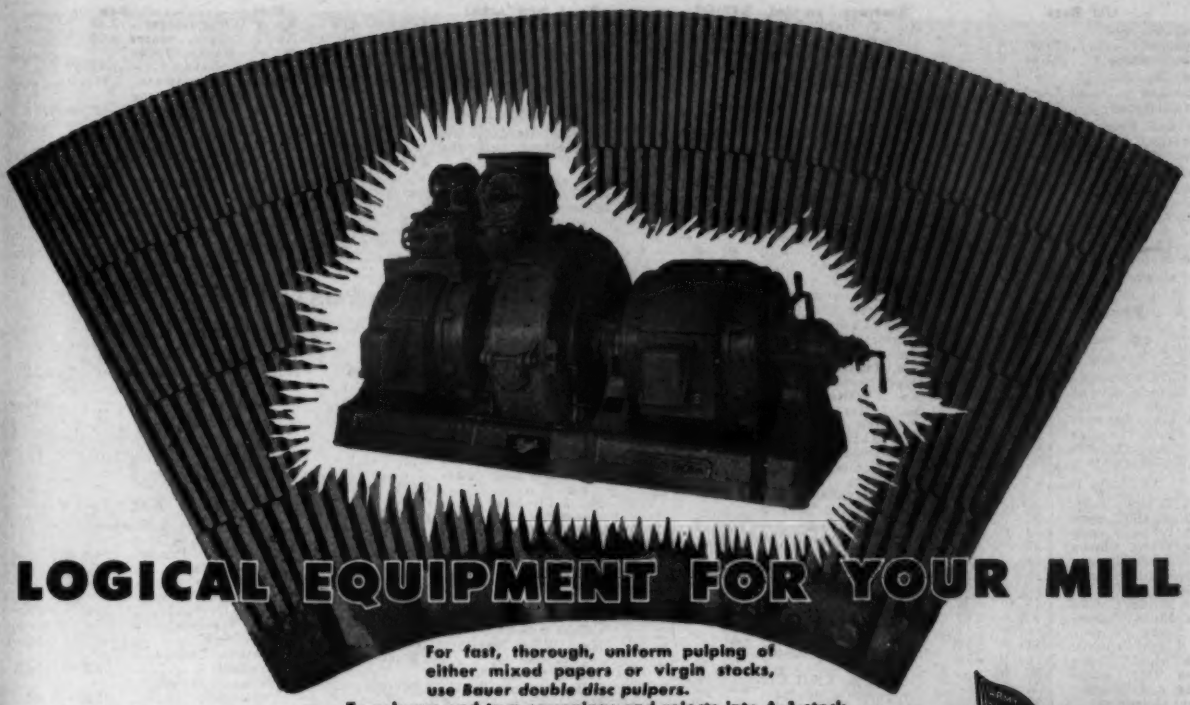
Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

*OPA Maximum Prices



LOGICAL EQUIPMENT FOR YOUR MILL

For fast, thorough, uniform pulping of either mixed papers or virgin stocks, use *Bauer double disc pulpers.*

To salvage and turn screenings and rejects into A-1 stock install *Bauer double disc pulpers.*

Two sizes 36" and 24". Plate patterns according to the need.

THE **BAUER BROS.** CO. SPRINGFIELD OHIO

Bauer

ELIXMAN

CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

CORES

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.

CORINTH, N. Y.

Old Rags

White, No. 1—			
Repacked	*1.80	"	—
Miscellaneous	*1.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

*OPA Maximum Prices.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.35	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.24	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.21	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07¾
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¾
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03¾
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¾
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¾

Domestic Rags (Old)

White No. 1—Repacked	1.80	"	—
Miscellaneous No. 1	1.20	"	—
Miscellaneous No. 2	1.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.31	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.90	"	4.10
No. 1 Clean bright—			
Sisal Strings			.84
No. 2 Clean bright—			
Sisal Strings			.83
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	1.25	"	1.30
No. 2	1.75	"	1.80
Wool Tares heavy	4.00	"	4.25
No. 1 New Light Burlap	3.90	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.35	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.24	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.21	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.30
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	
Soft Jute Rope	4.50	"	5.00
Jute Car Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	3.35
South American	—	"	3.25
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	
Aust. Wool Pouches	—	"	3.75
New Zealand Wool Pouches	—	"	3.50
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.04½
New White No 1.	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06½
Underwear Cutters, Bleached	.06¼	"	.06½
Underwear Cutters, Unbleached	.05½	"	.06
Silesias No. 1	.06	"	.06½
New Black Silesias	.03	"	.03½
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06½
Blue Cheviots	.05½	"	.06
Fancy	.02¼	"	—
Washable	.02¼	"	—
Khaki Cuttings	.02¼	"	.03
O. D. Khaki	.03½	"	.03½
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06½
B. V. D. Cuttings	.06¼	"	.06½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	1.80	@	—
Miscellaneous	1.20	"	—
White No. 2—			
Miscellaneous	1.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

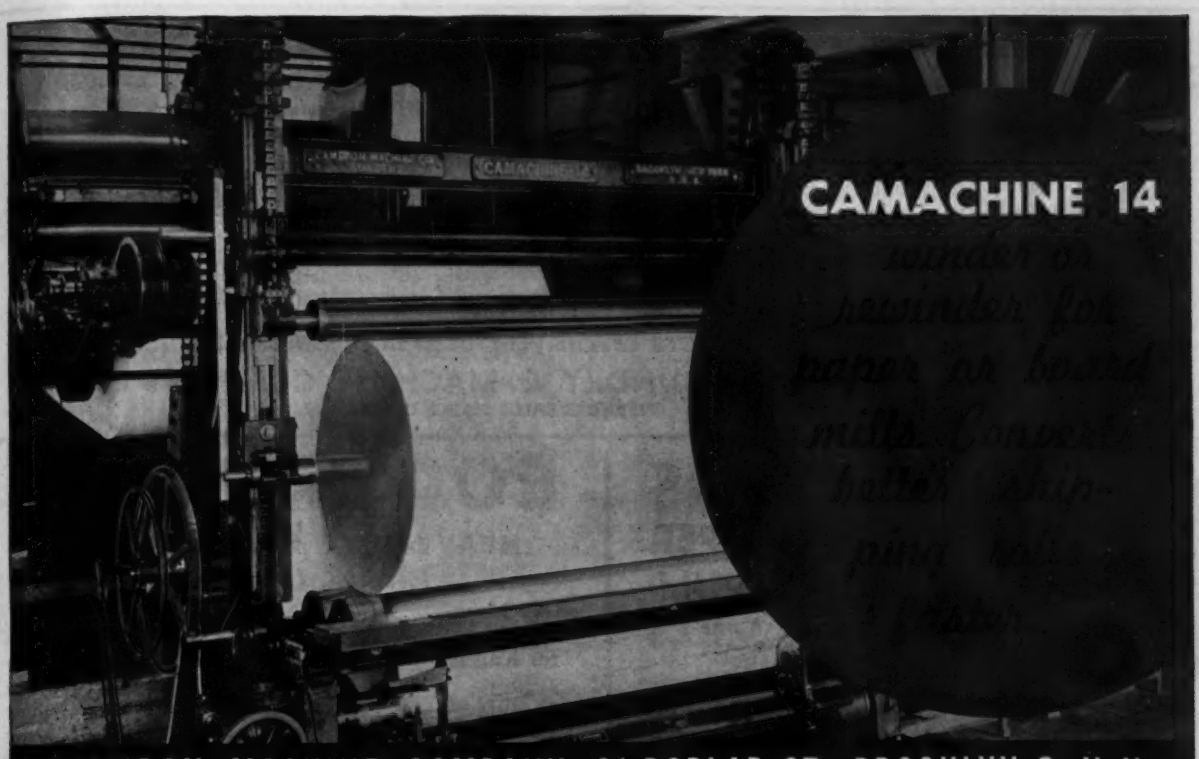
CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

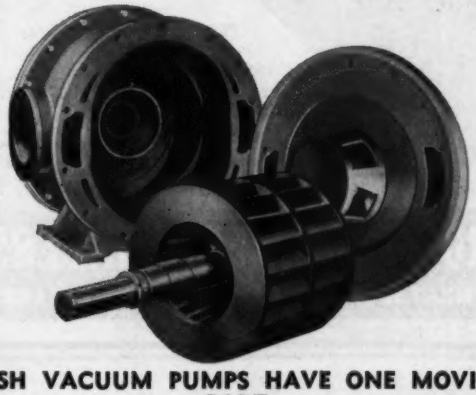
Shavings—			
No. 1 Hard White Envelope Cuts, one cut	1.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.35	"	—
No. 1 Roofing Bags	1.45	"	—



CAMERON MACHINE COMPANY 61 POPLAR ST., BROOKLYN 2, N. Y.

Midwest Office: 111 W. Monroe Street, Chicago 3, Ill.

SIMPLICITY



NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

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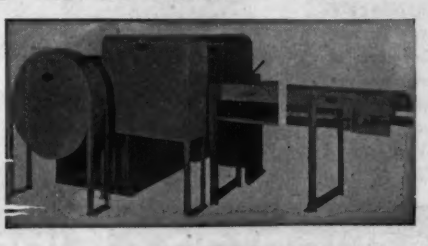
MANY EFFICIENT MILLS USE



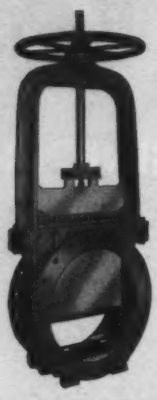
TAYLOR-STILES NO. 11 MULTIPLEX CUTTER

for fine cutting of rags in making roofing and felt papers. Capacity to 3½ tons an hour. Others of our machines are used in the manufacture of other types of paper.

Let Us Know What YOUR Cutting Problem Is.

10 Bridge Street, Riegelsville, N. J.

TAYLOR-STILES and Company
CUTTING MACHINES & KNIVES



RECORD PAPER & PULP STOCK VALVES "BONNETLESS SELF CLEARING" – – – "RESIDUE POCKETLESS TYPE"

METALS — I.B.B.M., all iron, bronze or stainless steels, body parts plain or rubber lined.

The photo of 24" Fig. 241 I. B. B. M. valve while illustrating the gate bottom wedge system for forced gate seating and "GUILLOTINE" edge for shearing fibre at seat also shows the packing box and yoke as separate units. Both adjustable.

- The "FAST THREADED" screw stem and ball bearing speeds valve operation.
- The packing box is extra deep, is adjustable and provided with specialized lubricated packings and special type gland and compression bolts.
- The yoke mountings are such that yokes for various methods of gate operation are interchangeable.
- Replaceable gate edge shoes are used in valves 10" and larger. These shoes are of special value when valves are installed stem and pipe horizontal.

"RECORD PRODUCTS EXTENSIVELY USED IN DEFENSE PROJECTS."

RECORD FOUNDRY & MACHINE COMPANY
LIVERMORE FALLS, MAINE, U. S. A.

SCREENS for PAPER and PULP MILLS

PERFORMANCE of your Centrifugals, Shakers and Drainers definitely improved by the use of precision screens built to your specifications. Let us "sit in" on your screening problems.

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HEAVY-DUTY KNIFE GRINDER
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48"
72"
90"
110"
134"

Get more production by sharpening your own ream cutters, chipper knives and stop cutters. Be sure of keenest cutting edges, ready when you want them. No skilled operator required. Type "NT" is a widely used time-and-cost saver . . . moderate in price. Send for circular NT and give length of knives.

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PRECISION QUALITY SINCE 1887

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for domestic and export

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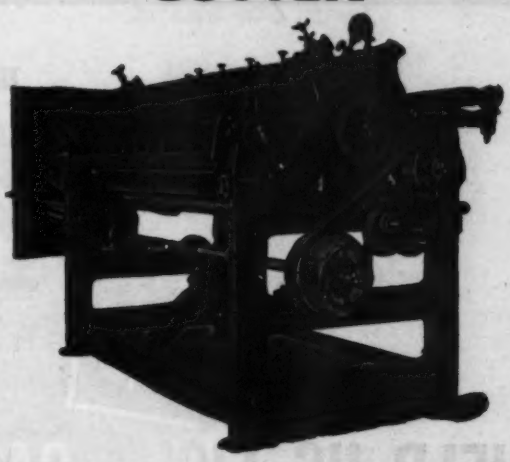
MODEL 28

ROLLER BEARING CUTTER



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Since 1903

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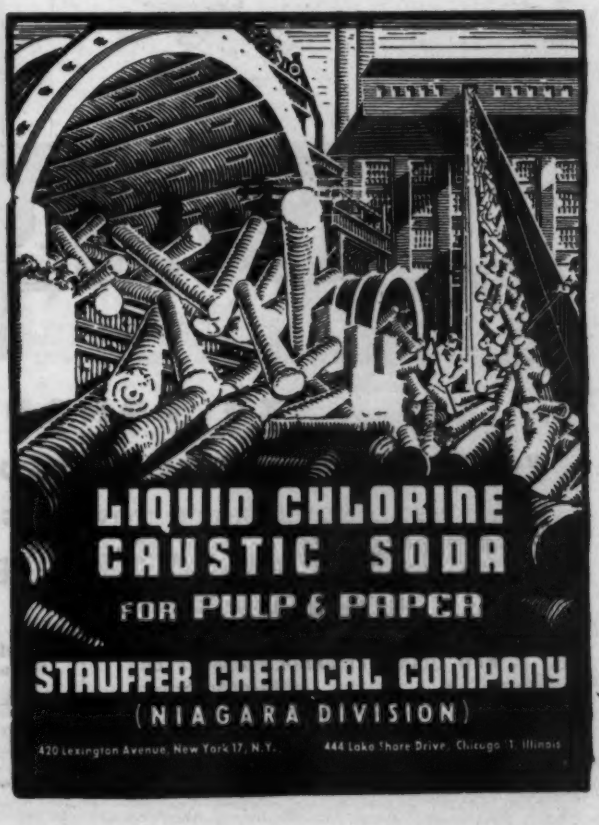
Lindsay WIRES



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CAUSTIC SODA
FOR PULP & PAPER

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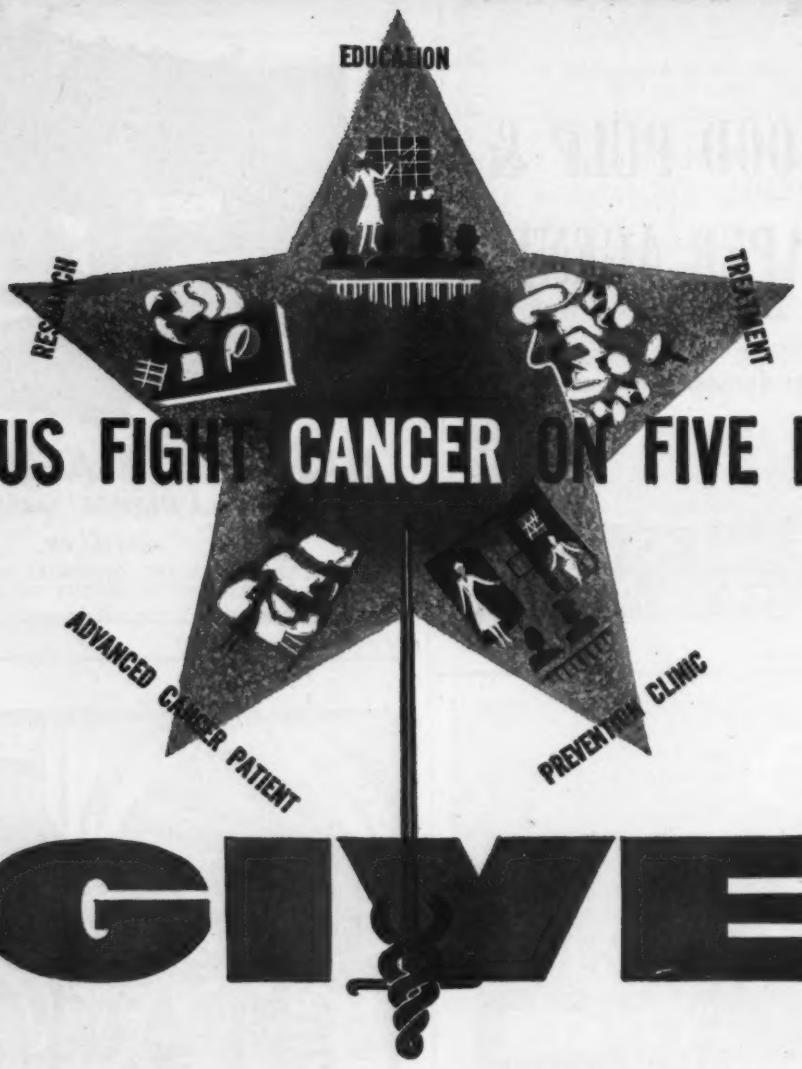
CANCER KILLS 1 ADULT OUT OF 6—IT MAY KILL YOU!



HELP US FIGHT CANCER ON FIVE FRONTS

GIVE

TO CONQUER CANCER

YOUR GIFT MAY SAVE YOU—OR THE LIFE OF SOMEONE DEAR

SEND YOUR CHECK NOW, AS GENEROUS AS YOU CAN MAKE IT.

If you live in the Metropolitan area of New York, send your check to:
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ADAPTED TO YOUR LABORATORY NEEDS

In performance and equipment the Bausch & Lomb Paper Technologist's Microscope is especially adapted to meet every laboratory need of the paper technologist.

Assembled in collaboration with the Institute of Paper Chemistry to the specific requirements of the industry, its features include: a large stage . . . detachable, graduated mechanical stage . . . micrometer scale eyepiece . . . adjustable graduated draw tube, as well as other specialized accessories.

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Examinations of paper furnishes . . . speck analysis . . . fiber identification . . . beating characteristics of pulps . . . particle size of filler and other materials . . . surface characteristics of paper . . . photomicrographic work.

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Optical Co., Rochester 2, N. Y.
Established 1853

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HELP WANTED—6c a word. Double rate for heavy face type. Minimum charge $1.25.
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WANTED—6c a word. Double rate for heavy face type. Minimum charge $1.25.
OPPORTUNITIES—6c a word. Double rate for heavy face type. Minimum charge $1.5

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2—2000 lb. Holyoke Iron Tub Beaters.
2—400 lb. Gavit—iron tub beaters.

LABORATORY BEATERS
1—30 lb. Noble & Wood Laboratory Beater, with motor.
1—12 lb. Noble & Wood Cycle Beater, with motor.

BLOWER
1—50" Buffalo.
Various other sizes.

CALENDER STACKS
1—11-Roll 92" Face Calender Stack—complete with Drive.
1—36" 7-roll—Holyoke Machine.
1—77" 2-roll—Moore & White.
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1—Shartle Brothers Centrap.

CYLINDER MOULDS
1—48" Diameter x 96" Face.
8—30" diameter x 72" face.
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1—36" diameter x 90" face.

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2—D. O. James 75 H.P. Speed Reducers with couplings and motor bases. Ratio 2.16 to 1. 900 RPM to 418 RPM.

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18—Dryers — 36" Diameter x 94" Face — complete with 2-deck Frames, etc.
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1—24" diameter x 84" face. (Baby).
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2—28" diameter x 68" face.

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1—28" two roll Embossing Calender.

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3—I. W. E. Erkenstators—bronze construction—complete with motors, starters and distributing box.

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1—600 ton Dunning & Boschert hydraulic Pulp Baling Press—low and high pressure hydraulic pump, valves, piping, etc. — Platen 38" x 38"—ram 20" diameter — daylight 50"—stroke 36".

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1—Pony Horne Jordan. Spare New Fillings.
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1—Smith & Winchester.

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1—100 H.P. General Electric Synchronous Motor—450 R.P.M.—Late type, including starting equipment.

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1—84" Carthage Chipper—complete and in excellent condition.
1—32" three pocket Glens Falls Grinder (for 27" wood).
3—Rotary incinerators—9' diameter x 20' long.
4—27" four pocket Sandy Hill grinders (for 24" wood—including 1000 H.P. motor for each, starting equipment, etc.).

PULPERS
1—#2 Lannoye Pulper.
1—Jones Pulper — direct connected to 60 H.P. motor—3 phase, 60 cycle, 440 volts —forward and reverse starting.

PUMPS
1—Buffalo Pump—5500 g. p. m., direct connected to 100 H.P. Motor (50' head).
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

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1—2 Bowl Reel — 112" face — bowls 20" diameter.
1—2 Bowl Reel—63" face.
1—2 Bowl Reel—110" face.

ROLLS
500—Brass tube—steel tube—rubber covered iron rolls—various sizes.

RUBBER COUCH ROLL
1—72½" Face x 9" diameter (soft rubber).

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1—#6 Bird Saveall—Mold 43 x 125—including couch roll.
1—Shartle Bros. decker 36" diameter x 60" face, including couch roll.
1—North Saveall—cylinder mould 72" diameter x 100" face.

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1—#25 CRSE Mitts & Merrill Hog.
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1—110" Horne single knife rotary sheet cutter.
1—48" Langston Chopper.

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1—36" Waldron sizing machine.

SLITTERS
1—114" Two drum Langston Slitter & Winder.
1—110" Beloit slitter (slitter attachment only).
1—114" Two drum Kidder slitter and winder.
1—36" Koegel slitter and winder.
1—Warren 72" trim, two drum slitter and winder.

SUCTION BOXES
1—Nash 100" face Suction Box.
3—Brass Suction Boxes—90" drilled face.
2—Brass Suction Boxes—77½" drilled face.

SUCTION COUCH ROLL
1—Sandusky Suction Couch Roll — 18" diameter x 130" face — Complete with Sturtevant Vacuum Pump and drive mechanism.

SUCTION PRESS ROLL
1—Sandusky suction press roll, 14 5/16" diameter x 68" drilled face.

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Specializing in Paper Mill Personnel
Positions Now Open

TECHNICAL DIRECTOR for board mill $7500 year, also assistant director technical control dept. in tissue mill $250 month to start.
Manager converting plant (tissue, toilet, etc.)
Development engineer for firm building paper machinery, also development engineer for packaging equipment in tissue mill
Chemists (several) up to $6,000 year
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Chief engineer $8,000—10,000 year
Back tenders, machine tenders, beater engineers, super-calender re-winder and cutter operators, and many others

We invite correspondence (strictly confidential) with employers seeking personnel and men seeking new positions. A-26

CHEMICAL AND MECHANICAL ENGINEERS

Wanted for senior positions in manufacturing control in a large printing and converting plant in Niagara Falls. Should be college graduates preferably with paper mill or manufacturing control experience. Give personal data, experience, and salary desired.

Apply B. J. Stanislow, Moore Business Forms, Inc., Research and Service Division, United Office Building, Niagara Falls, New York. M-17

WANTED—Experienced Millwright for small mill in Northeastern Pennsylvania. State age, experience and salary expected. Address Box 45-250 care Paper Trade Journal. M-17

HELP WANTED

EGG CARTON SALESMAN WANTED

Must be thoroughly familiar with production and marketing so as to build up "patented egg carton" business for large folding box manufacturers.

Address Box 45-255 care Paper Trade Journal M-10

PURCHASING AGENT—Age 30 to 40. Volume purchasing experie ncenecessary. Post war opportunity. Give complete resume and salary desired. Address Box 45-121 care Paper Trade Journal. A-26

SUPERINTENDENT for finishing department in large modern midwestern paper converting plant. Must be expert in laminating and coating of paper, plating, stack and friction calendering, and have a good chemistry background in paper and related materials. Knowledge of water-proofing of paper and application of lacquer and plastic coatings necessary. Address Box 45-210 care Paper Trade Journal. TF

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WANTED

Back Tenders and Third Hands for cylinder machines making folding boxboard. Vertical stack dryers. Permanent positions with highest pay and good opportunity for advancement.

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M-1

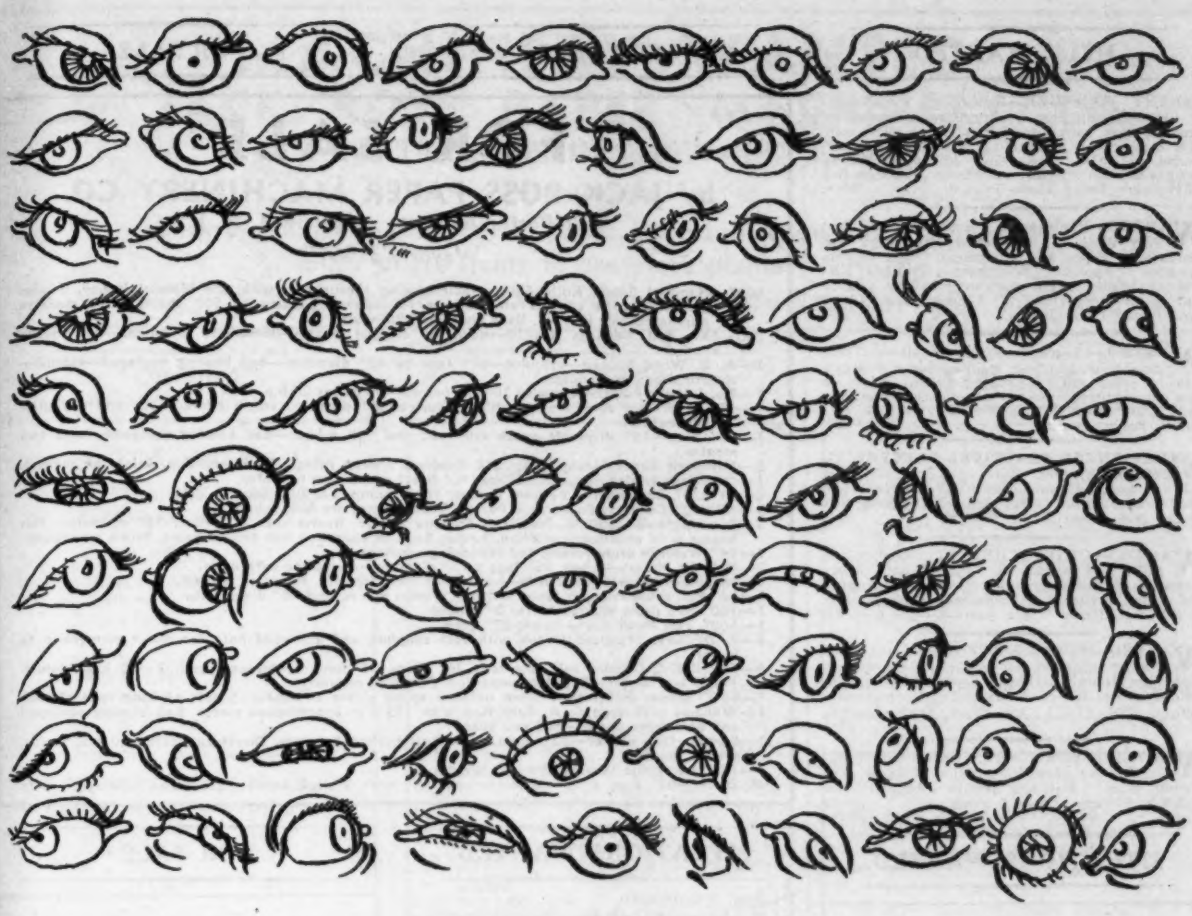
WANTED

ENGINEERS and DESIGNING DRAFTSMEN experienced in pulp and paper mill design and process by Consulting Engineers. Address Box 45-146 care Paper Trade Journal. T.F.

SUPERINTENDENT wanted for Furniture Bogus Mill near Albany, N. Y. Also Machine Tenders, Back Tenders, Millwright. State all when answering. Address Box 45-204 care Paper Trade Journal. A-26

CHEMIST—for eastern paperboard mill and folding carton fabrication plant. Experience or training in both branches of field required. Give complete information including personal status and salary expected. Address Box 45-213 care Paper Trade Journal. A-26

WANTED—Superintendent — cylinder machine. Experienced on dry saturating felt. Give references, age, married or single, where employed. Confidential. Pacific Coast. Address Box 45-212 care Paper Trade Journal. A-26



ARGUS OF THE HUNDRED EYES NEVER SLEPT
WITH MORE THAN TWO AT A TIME. HE WAS

The Original "Kid Alert"

Many a paper mill has taken its cue from Argus . . . is definitely "on the alert." Is your mill among them? Have you made your plans for post-war?

Will it be reconversion?

Will it be future expansion?

Will it be more economical production?

Will it be a better product?

Will it be government orders?

Black-Clawson Company and divisions Shartle & Dilts have the experience and the facilities to help you. Their engineers await your call.

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HAMILTON, OHIO
Divisions: Shartle Bros. Machine Co., Middletown, Ohio. Dilts Machine Works, Fulton, N. Y.

SHARTLE Dilts

HELP WANTED

PLANT MANAGER—Established Philadelphia Plant making high quality bags (self-opening, squares, flats, sacks, specialties) want plant manager experienced in handling production and personnel in union shop. Give full qualifications. Replies held in strictest confidence. Address Box 45-196 care Paper Trade Journal. M-31

WANTED—Engineering Draftsman for Post War Work on Paper Mill Machinery. Experience in Paper Mill equipment design helpful. Location: Appleton, Wisconsin. EMPLOYER: Old established paper machinery builder. Excellent future opportunity. Address Box 45-219 care Paper Trade Journal. M-3

WANTED — Licensed Steam Engineer. One capable of handling maintenance and operation in paper mill on Pacific Coast. Apply in own handwriting stating experience, references and salary wanted. Address Box 45-244 care Paper Trade Journal. TF

EXPERIENCED PRACTICAL ELECTRICAL ENGINEER for Midwest pulp and paper mill. Please state age, education, experience and draft status. Also salary desired. Address Box 45-240 care Paper Trade Journal. M-3

WANTED—CHIEF CHEMIST for pulp and paper mill located on Pacific Coast. Apply in own handwriting giving references, experience and other pertinent information. Address Box 45-243 care Paper Trade Journal. TF

WANTED—A Papermill Engineer, not over thirty-five, technical graduate, board mill experience desirable. Please list complete qualifications in first letter. An exceptional opportunity. Address Box 45-253 care Paper Trade Journal. M-3

WANTED—SECRETARY, familiar with bookkeeping for New York office of paper converting plant. Male or female. Address Box 45-248 care Paper Trade Journal. A-26

SITUATIONS WANTED

PLANT MANAGER

Have broad practical experience over past sixteen years comprising accounting, production, operation, maintenance, engineering, and administration of cylinder board machine operation producing high grade boxboard and specialties. Have college education in business administration. Have ability to obtain top production plus quality of product. Management approach that can produce profits. Currently engaged but available on reasonable notice. Address Box 45-251 care Paper Trade Journal. M-3

PRODUCTION MAN—Thoroughly experienced in production and supervision all varieties fine cardboards. Successful record personnel relations Address Box 45-4 care Paper Trade Journal. A-26

SUPERINTENDENT Finishing and Shipping or Paper Converting Plant. Years broad practical experience. Proficient equipment operation Mfg. and Converting, order scheduling, inventories, etc. Wrapping Tissue, Envelope, Bonds, Book, News, Waxed, Oiled, Specialties. Available at once. Address Box 45-214 care Paper Trade Journal. M-3

SUPERINTENDENT — Twenty years experience on folding, set-up, test liner board and sulphite specialties. Last five years as superintendent. Will consider tour boss position, offering a better opportunity to young man with initiative. Excellent reference. Address Box 45-237 care Paper Trade Journal. M-10

SALES road or office. Thirteen years experience paper field with fabricator and mill, estimating, sales, department manager experience, capable, resourceful, seeking position with fabricator, mill or supplier. Age 38. Located Middle West. Address Box 45-236 care Paper Trade Journal. M-3

PRODUCTION ENGINEER or Superintendent —On cylinder products of quality and quantity. Can save you money on Post War Planning. Invite negotiations with progressive company. Address Box 45-235 care Paper Trade Journal. M-3

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FOR SALE

FOR SALE

by JACK ROSS PAPER MACHINERY CO.

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Waverly 3-5675

100"—Hamblet Single Knife Sheeter-ball bearing throughout, with one Maxson layboy, 4 piles complete with counter and marker for counting reams of 500 sheets. This machine purchased new in 1941. Used less than 100 hours.
200—SKF Ball Bearings #6220—new, in original boxes—immediate shipment—no priority needed.
1—A. D. Wood Saveall—cylinder—60" face by 48" diameter—ball bearing equipped—rebuilt—specifications on request.
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1—42" Liner and combining machine. Fourteen 6" diameter steam heated rolls and one drier 24" diameter.
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3—Improved Paper Machy. Corp. #2 Knotters Bronze fitted. Good condition. Prints on request.
1—#2 Miami Jordan ¾ bronze fillings for direct connection to motor.
2—14"x20" Connersville Vacuum Pumps. These pumps are fully rebuilt.
3—12"x18" Connersville Vacuum Pumps. These pumps are fully rebuilt.
1—Downingtown 2500 lb. Iron Tub Cyclone Beater. Beater rolls 60" face, 72" diameter. This beater is in excellent condition, having been in operation less than 2 years. Prints on request.
1—44" Waldron drum reeling and rewinding machine.
2—Holyoke Platers—2 roll, 36" face x 18" diameter—complete with drive.
1—Nichols-Herreshoff Lime Kiln—vertical 65 tons capacity. Prints on request.
1—72" two drum Pusey & Jones Slitter & Winder will rewind 40" diam. rolls.
1—100" two drum Warren Slitter & Winder.
1—100" Two Bowl Reel—Bowls 20" diam.
1—E. D. Jones Standard Jordan with fast coupling and extended base for direct connection to motor.
1—Farrell Roll Grinder will take rolls 26" diam. 18' long. Motor equipped. 2—10 h.p. Motors. 1—15 h.p. Motor—Excellent condition. Prints on request.
1—156" Moore & White 4 drum uniform speed slitter & winder. 5 sets of King type slitters.
1—Williams #30 type C. A. Bark Hog with 125 h.p. Synchronous motor. Ball bearing equipped and new spare parts—used one year.
1—Sumner Disc Barker—72" diam. disc. Anti-friction bearings. Direct connected 30 h.p. motor. used 5 months.
1—140" two drum Warren Slitter & Winder.
45 Driers—96" face x 28" diameter complete with 2 deck frames, gears and bearings. A-26

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CHEM. ENGINEER, 15 years paper and board mill experience, desires change. Production control, development, power, maintenance, construction. Address Box 45-247 care Paper Trade Journal. A-26

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FOR SALE

1—Complete 98" Fourdrinier Paper Machine with 26 Dryers, 48" diameter x 96" face, including auxiliary equipment. Additional details on request.

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FOR SALE

FOR SALE

1—10"x20" Beloit Triplex Stock Pump.
1—Garment Bag Machine, smallest bag 17½" wide by 30" long. Largest bag 23" wide by 65" long.
1—7-Roll 48" wide Holyoke Super Calender Stack, complete with 50 H.P. G. E. a.c. 3 phase 60 cycle, 220 volt motor equipment. Machine in perfect condition.
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1—40" Clark and 1—42" Moore & White Rotary Sheet Cutters.
1—34" Late type Waldron Embosser with inking attachment. Practically new.
3—Double-drum Warren Winders, 82", 103" and 104" wide.
Complete line of self-opening bag machines from 1 to 35 lbs. Also, flat and square bag machines from 1 to 20 lbs.
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TF

FOR SALE

34" Sheridan "New Model" Automatic Power Cutter.
40" Oswego hand clamp Power Cutter
44" Seybold Holyoke Auto. Power Cutter.
63" Oswego Mill Type Cutter, power back guage.
50" Clark Sheeter.
110" Hamblet heavy duty Sheeter with backstand.
68" Rice Barton & Fales Slitter & Rewinder, for use on dry end of paper machine.
120" Moore & White 4-drum Rewinder.
36" Waldron Embosser.
4 Waldron 36" Paper Reels.

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FOR SALE—One 62" Johnstone fourteen ct. uniform tension unwinder complete with water cooled disc type mill roll brake and with manual guiding control. Machine brand new. Address Box 45-254 care Paper Trade Journal. M-3

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1—14 x 87 7/8
1—11 3/4 x 92 7/8
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These rolls can be cut down.

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1—14 x 72
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1—15 x 77
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1—13 11/16 x 85 3/4
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1—17 7/8 x 86 11/16
1—17 7/16 x 87 7/8
1—17 3/4 x 87 7/8
1—18 x 89
1—20 x 90
1—19 3/4 x 96
1—14 3/4 x 97 3/4
1—14 7/8 x 98 1/8
1—17 7/16 x 106
1—18 x 106
1—17 5/8 x 106
1—21 3/4 x 106
1—19 7/16 x 108
1—21 7/8 x 113
1—17 11/16 x 119
1—17 11/16 x 119
1—20 x 122
1—19 13/16 x 122
1—17 11/16 x 124
1—19 7/8 x 124
1—19 7/8 x 124
1—19 3/4 x 145

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1—23 7/16" x 69 11/16"
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1—24 x 112 7/16"

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Care Paper Trade Journal.
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One 158" ten roll Calender stack

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One 88"—9 roll Calender stack

One 45"—3 roll Calender stack

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And numerous other Box Mfg. & Paper Converting Machines.

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M-3

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Material is now running, in good condition.
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One Beater of 1,000 lb. capacity. Give complete description, specifications and price.

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Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G.

COMPRESSORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
Ingersoll-Rand Co.
Nash Engineering Co.
Worthington Pump & Machinery Corp.

CONSULTING ENGINEERS
W. H. L. D. Betz
Frederic C. Clark
Ferguson, Hardy S.
Hardy, George F
Johnson & Wierk, Inc.
The Kohler System Company
Main, Inc., Chas. T.
J. E. Sirrine & Co.
Stone & Webster Engrg. Corp.

CONVEYORS
Black-Clawson Company
Murray, D. J. Mfg. Co.
Ross Engineering Corp., J. O.

CORES
Elixman Paper Co.
Sonoco Products Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Smith & Winchester Mfg. Co.
Walker-Goulard-Plehn Co.

COUPLINGS
Black-Clawson Company
De Laval Steam Turbine Co.
Farrel-Birmingham Co., Inc.
The Frederick Iron & Steel
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John
Westinghouse Electric Mfg. Co.
T. B. Wood's Sons Company

CUTTERS
Thomas W. Hall Co.
Noble & Wood Mach. Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
Taylor Stiles & Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DE-INKING
Kinsley Chemical Co.

DIGESTERS
The Bigge Boiler Works Co.
H. K. Porter Company Inc.
Pusey & Jones Corp.

DOCTORS
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Black-Clawson Company
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Shartle Brothers
United States Rubber Co.
Westinghouse Electric & Manufacturing Company

DRIERS
Black-Clawson Company
Murray Mfg. Co., D. J.
J. J. Ross Company
Ross, J. O. Engineering Corp.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Davis, Frank H., Co.
De Laval Steam Turbine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
General Electric Company
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Moore & White Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
T. B. Wood's Sons Co.
Valley Iron Works Co.
Westinghouse Electric & Manufacturing Company

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
E. D. Jones & Son Co.
Moore & White Co.
Noble & Wood Machine Co.
Norwood Engrg. Co.
D. J. Murray Mfg. Co.

DYESTUFFS
Calco Chemical Co.
Ciba Company
E. I. du Pont de Nemours & Co.
Geigy Co., The
General Dyestuff Corp.
National Aniline Division, Allied Chemical & Dye Corp.
Paper Makers Chemical Department, Hercules Powder Co.
C. K. Williams & Co.
Witco Chemical Co.

EVAPORATORS
Black-Clawson Company
Goslin-Birmingham Mfg. Co., Inc
Murray, D. J., Mfg. Co.
Traylor Engineering & Mfg. Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Merrick Scale Mfg. Co.
Leeds & Northrup
Traylor Engineering Co.
Wallace & Tiernan

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bloomfield Woolen Co.
Bulkley, Dunton Pulp Co. Inc.
Draper Bros. Corp.
Fitchburg Duck Mills
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Woodward, Baldwin & Co.

FELT GUIDES
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Colloid Co.
Amer. Cyanamid & Chem. Corp.
International Pulp Co.
W. H. Loomis Talc Corp.
Union Talc Co.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
Moore & White Co.
J. O. Ross Engrg. Corp.
Worthington Pump & Mchy. Corp.
Witco Chemical Co.

FLOORING, GRATING & TREADS
Hendrick Mfg. Co.
Norton Co.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
United States Rubber Co.

FORMING MACHINES
Downingtown Mfg. Co.
Noble & Wood Machine Co.
Oliver United Filters
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

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GEARS
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

GRINDERS
Covel-Hanchett Co.
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Simonds Worden White Co.
United States Rubber Co.

HEATING, VENTILATING AND AIR CONDITIONING
The Appleton Machine Co
Armstrong Machine Works
E. D. Jones & Sons Co.
General Electric Co.
Grinnell Company
Leeds & Northrup
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Ross Engineering Corp., J. O
Shartle Brothers Machine Co.
Valley Iron Works Co.
Worthington Pump & Mchy Corp.

HOISTS
Appleton Machine Co.
Dilts Machine Works
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

HOSE (Air, Water, Suction, etc.)
The Cincinnati Rubber Mfg. Co.
The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan Inc.
United States Rubber Co.

INSTRUMENTS, TESTING AND MEASURING
W. H. & L. D. Betz
N. P. Bowsher
The Foxboro Company
General Electric
W. & L. E. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taylor Instrument Cos.
Wallace & Tiernan Co., Inc.
Westinghouse Electric & Manufacturing Company

JORDAN FILLINGS
Appleton Machine Co.
Behr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Simonds Worden White Co
Valley Iron Works Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
W. H. & L. D. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Valley Iron Works Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.
Shartle Brothers

LUBRICANTS
Gulf Oil Corporation
Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

LUBRICATORS
Hills-McCanna Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Car Wheel Co.
Walker-Goulard-Plehn Co

MIXERS
Youngstown Welding & Engrg. Co.

MOISTENING EQUIPMENT
The Spray Engineering Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric & Manufacturing Company

PACKING BOXES
Johnson Corporation
Shartle Brothers Machine Co.

PACKING
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
United States Rubber Co.

PAPER MACHINES
Black-Clawson Company
Downingtown Mfg. Co.
Thomas W. Hall Co.
Moore & White Co.
Pusey & Jones
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

PIPE
Black-Clawson Company
Crane Company
Grinnell Company
Shartle Brothers Machine Co.
Taylor Forge & Pipe Works
Walworth Company
Youngstown Welding & Engrg. Co.

PLATERS
Perkins & Son, Inc., B. F.

PLATES
Black-Clawson Company
Hendrick Mfg. Co.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co
Timken Roller Bearing Co.

PLUGS
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

PRESSES
Black-Clawson Company
Farrel-Birmingham Co.
Dietz Machine Wks.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Potdevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
Valley Iron Works Co.
Waldron Corp., John
Weber, Homer C.

PUG MILLS
Traylor Engineering & Mfg. Co.

PULPS
Anderson Co., J.
Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PUMPS
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Frederick Iron and Steel Co.
Hills-McCanna Co.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Noble & Wood Machine Co.
Paper Converting Mch. Co.
Quimby Pump Co. Div. of H. K. Porter Company, Inc.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company
Worthington Pump & Machinery Corp.

RECOVERY SYSTEMS
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones
Ross Engineering Corp. J. O.
Valley Iron Works Co.

RECTANGULAR BINS
Traylor Engineering & Mfg. Co.

REELS
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Behr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
The Hermann Manufacturing Co.
E. D. Jones & Sons Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Brown Instrument Co.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Shartle Brothers
Taylor Instruments Companies
Wallace & Tiernan
Westinghouse Electric & Manufacturing Company

RESINS
American Cyanamid & Chemical Corp.
The Resinous Products & Chemical Co.

ROLLS
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp.
Lobdell Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
Roehlen Engraving Co.
J. J. Ross Company
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnetic Mfg. Co.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
The Cincinnati Rubber Mfg. Co.
Youngstown Welding & Engrg. Co.

ROLL STANDS
Cameron Machine Co.
Johnstone Eng. & Machine Co.
The Kohler System Company
Moore & White Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.

ROTARY KILNS
Traylor Engineering & Mfg. Co.

SATURATING MACHINES
Black-Clawson Company
Moore & White Co.
Noble & Wood Machine Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman C.

SCALES
Merrick Scale Mfg. Co.

SCREEN PLATES
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Union Machine Co.
Union Screen Plate Co.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Harrington & King Perforating Co
Hendrick Manufacturing Co
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.

SCRUBBERS
Traylor Engineering & Mfg. Co

SHEET MACHINES
Thomas W. Hall Co.
The Hermann Manufacturing Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
Valley Iron Works Co.

SHOWER PIPES
Bird Machine Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
Moore & White Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.

SIZING
American Cyanamid & Chemical Co.
Black-Clawson Company
The Dow Chemical Co.
du Pont, E. I., de Nemours & Co.
National Oil Products Co.
Paper Makers Chemical Department, Hercules Powder Co.
Pioneer Salt Company
Socony-Vacuum Co.
Philadelphia Quartz Co.

SLITTERS
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Company
Johnstone Eng. & Machine Co.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SPRAY NOZZLES
The Spray Engineering Co.

STAINLESS STEEL
Eastern Stainless Steel Corp.
Industrial Steels, Inc.

STARCH
American Cyanamid & Chemical Corp
Clinton Co.
National Starch Products, Inc.
Stein, Hall & Co., Inc.

WHERE TO BUY

STEAM SPECIALTIES
Johnson Corp.
Sherdle Bros. Mch. Co.
Stickle Steam Specialties Co.

STRAPPING & STRAPPING MACHINES
The Stanley Works

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES
Black-Clawson Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Westinghouse Electric & Manufacturing Company.

SULPHUR
American Cyanamid & Chemical Corp.
Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company

SULPHUR BURNERS
Valley Iron Works Co.

TALC
American Cyanamid & Chemical Corp.
W. H. Loomis Talc Corp.
International Talc Company

TANKS
Frederick Mfg. Co.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
The Noble & Wood Machine Co.
H. K. Porter Company Inc.
Rodney Hunt
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Taylor Engineering & Mfg. Co.
United States Rubber Co.
Waldron Corp., John
Youngstown Welding & Engrg. Co.

THICKENERS, DECKERS & SAVEALLS
Bird Machine Company
Bulkley, Dunton Pulp Co. Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TITANIUM
E. I. Du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company

TOOLS
Acme Steel Company
Ingersoll-Rand Co.
The Stanley Works
Walworth Company

TRUCKS
Elwell Parker Electric Co.
Wright-Hibbard Ind. Elec. Truck Co.

TRAPS
Armstrong Machine Works
Crane Co.
Grinnel Company
Johnson Corporation
Shartle Bros. Mch. Co.

TUBS
Rodney Hunt Machine Co.
Noble & Wood Machine Co.
Shartle Brothers
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.
Westinghouse Electric & Manufacturing Company
Worthington Pump & Machinery Corp.

USED EQUIPMENT
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
Shartle Brothers Machine Co.

VALVES
Crane Company
Dilts Machine Works
The Foxboro Company
Hills-McCanna Co.
E. D. Jones & Sons Co.
Kennedy Valve Mfg. Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Permutit Company
William Powell Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Taylor Instrument Companies
Valley Iron Works Co.
Walworth Company

VATS & VAT PARTS
Union Machine Co.
Union Screen Plate Co.

WASHERS
Bird Machine Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

WATER CONDITIONING
The Permutit Company

WAXING MACHINERY
Black-Clawson Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WELDING EQUIPMENT
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company
Westinghouse Electric & Manufacturing Company

WET MACHINES
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Moore & White Co.
Montague Machine Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WINDERS AND REWINDERS
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
Johnstone Eng. & Machine Co.
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron Corp., John

WIRES
Appleton Wire Works
Black-Clawson Company
Bulkley, Dunton Pulp Co. Inc.
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Hayden Wire Works
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Shartle Brothers Machine Co.

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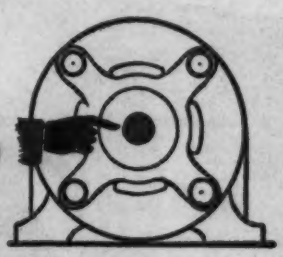

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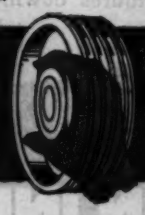

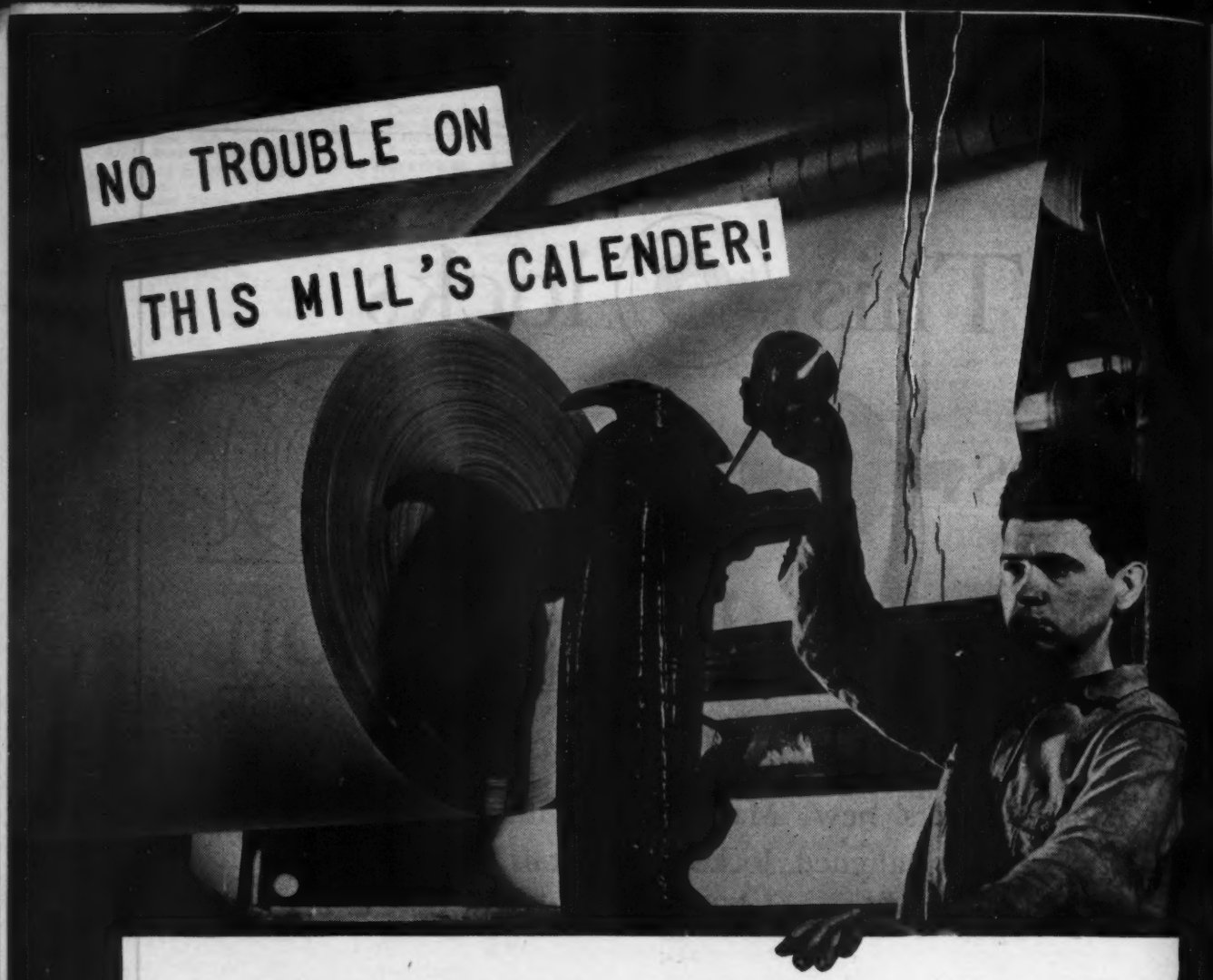

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